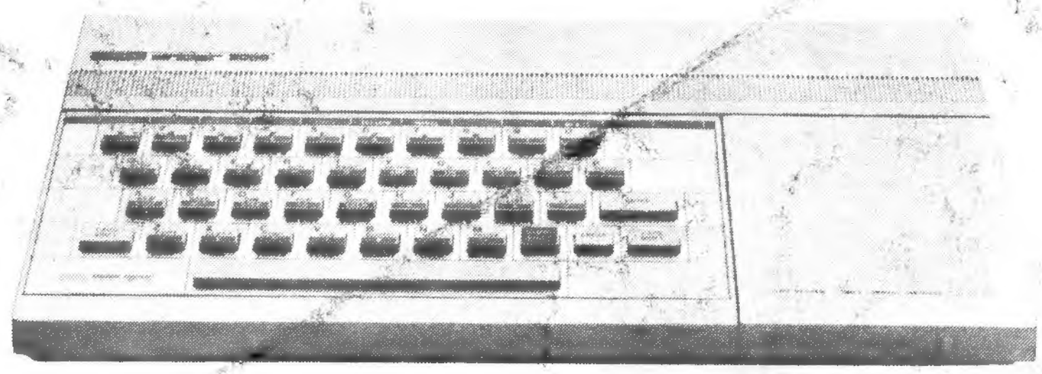
T·S Horizons

Affordable Quality for the Timex Computer User

April/May **NO. 5** **$1.25**



QUICKSILVA
THOMAS B. WOODS
SYNC
21st CENTURY ELECTRONICS
HUNTER BANTA
BYTE-BACK
SOFTWARE
Rompak
G. RUSSELL
E-Z
timex
robotec, inc.
KEY
sinclair
MEMOTECH
AERCC
dkTronics
SOFTSYNC

SUPPORT FOR THE 2068?

HARDWARE

BANK SWITCHING FOR THE TS 1000 Part 2
Expand To 96K - by Paul Hunter

PROGRAM
"WORM" word processor
FOR YOUR 1000-1500 COMPUTER

REVIEWS

Portsmouth
Ohio
45662

BULK RATE
US POSTAGE
PAID
PERMIT#151

T-S Horizons

BACK ISSUES OF T-S HORIZONS ARE NOW AVAILABLE

Each issue brings you approximately thirty-two pages of usable information, program listings, product reviews, programming articles, hardware projects, and applications you can use in your home or business. T-S HORIZONS features nationally known writers like Gordon Young and Paul Hunter. And now you can get the back issues you missed for only $1.25 per issue!

Issue #1 Creating and Saving Files, Uninterruptible Power Supply, Repeat Key Module, Numerical Analysis, and more!

Issue #2 Memory Reduction, Matrix/Cursor Input, User-Friendliness, Graphics Tutorial, Reset Switch Project, and more!!

Issue #3 Animation, Simple Loading Aid Project, File Protection, Differential Equations, Ham Radio, and more!!!

Issue #4 Bank-Switching for the TS1000-Part 1, Error Recovery, TS2068 Edge Connector Schematics, Converting to T/S BASIC,Simpson's Rule, more!!!

Enclosed is US$ 2.50.
Please send the indicated issues of T-S Horizons for $1.25 each.

NAME Charles Parker Jr.
ADDRESS 2016 Woodcrest Rd
CITY Mobile
STATE,ZIP Alabama 36609

\ #1 ____ #2
____ #3 \ #4

Send to: T-S Horizons, Back Issues, 2002 Summit St., Portsmouth, OH 45662

T-S Horizons

Affordable Quality for the Timex Computer User
2002 SUMMIT ST. PORTSMOUTH, OHIO 45662

Table of Contents

ENTER	4
Guest Editorial by Stan Veit	6
Reader INPUT	8
Program Tips by Rois Harder	11
Numerical Analysis by Ken Lewis	12
"WORM" Word Processor by Gordon Young	14
TS 1000 Bank Switching by Paul Hunter	16
Graphics Program by Johnson and Swartz	20
Reviews	21
T-S NEWs	27
USR NEWs	30

FORMAT	SIZE*	1X	2X
Full page	6-1/4 x 9	$125	$119
2/3 page	4-1/2 x 9	100	95
1/2 page	6-1/4 x 4-1/2	75	71
	3 x 9		
1/3 page	4-1/2 x 4-1/2	65	62
	2 x 9		
1/4 page	3 x 4-1/2	35	33
1/6 page	2 x 4-1/2	29	21
1/9 page	2 x 3	17	16
2 inch	2 x 2	12	11
1 inch	1 x 2	6	5

*No charge for ad reduction.
FORMAT: Black and white only. Ads may be reproduced from an ad in another publication.
CLOSING DATES: 15th of month preceeding issue date.
FREQUENCY: Monthly.

There's something NEW on the horizon.

QUALITY, UTILITY, ACCESSIBILITY, AFFORDABILITY.
This the combination you've been waiting for.
Don't miss an issue. Subsribe NOW!

I want to have T-S HORIZONS delivered to my home every month.
I have enclosed $12.00 for a one-year (12 issue) subscription.
$18.00 Canada. $20.00 other foreign.

Name _____
Address _____
City _____ State _____ Zip _____

Mail form with check or money order to:
T-S Horizons
Subscription Dept.
2002 Summit St.
Portsmouth, OH 45662

Please start my subscription with the 5th issue.

ENTER

Dear Fellow Timex and Sinclair Computer Users,

Thank you for your patience. T-S Horizons is intended to be monthly but as you can see, you are holding the April/May issue of T-S Horizons in your hands. Income tax matters were only one of the reasons we are late. At any rate thank you for bearing with us.

There is a lot of news concerning the Timex computing world these days - largely bad news, but enough good news that we are encouraged. We hope you will be too.

I got some critical comments regarding last issue's cover, and I suppose I deserve it. I'm usually an optimist but Timex's lay-down-and-die attitude really upset me. The "2068 tombstone" represented the Timex Computer Corporation only, and not the TS-2068 itself, Timex users in general, or the future of T-S Horizons. Actually I'm optimistic about the last three.

Hope for the TS-2068?

Due to recent ads selling Timex products at 1/2-off and last-minute buying by TS-1000 owners, the stockpile of TS-2068's at Timex is nearly gone. All of the TS-2040 printers have been sold (except for the few being returned by dealers). Some software and TS-2020 program recorders are still available for an unknown period of time. The TS-1000 is out of production. However the TS-1500 is still being made on a limited basis for educational use. (You know, those correspondence schools that advertise in magazines like Popular Mechanics, that offer to teach you how to program and give you a free computer.)

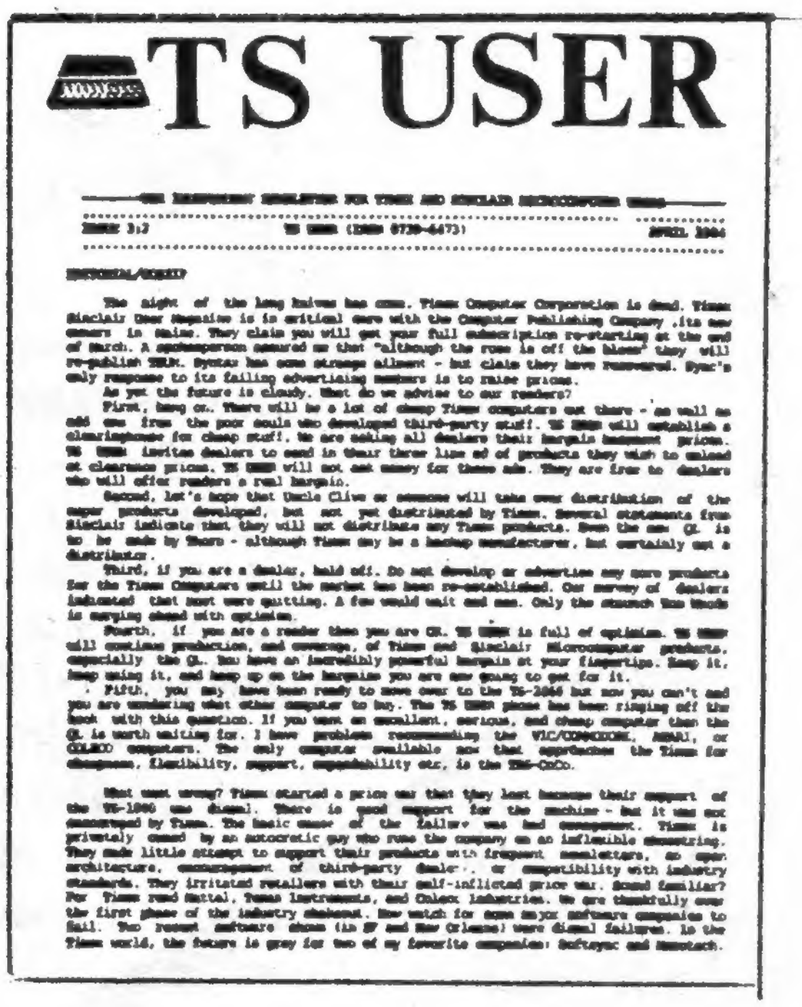
However if you've heard rumors that someone is seeking the rights from Timex to market the TS-2068 and/or TS-1000, they're not just rumors. Our sources at Timex say no less than 20 parties are inquiring about the prospect - some of them seriously. As we understand it Timex will manufacture the 2068 if they can get a firm order for 25,000 units. It will be the same machine, but will not carry the Timex name. (This makes some sense. Timex was perfectly happy with the TS-1000 as long as it was "selling itself." But when they really had to market it and the 2068, they dropped them.)

So it seems there is some hope for the Timex (?) computers. (Note: Clive Sinclair still has made no reassuring gestures to American users.)

Publishing - Another One Bites the Dust

- In case you haven't heard Sync has sunk.
The March/April issue was the last. When I heard the news, I called their offices to find out why. Incredibly, the guy I talked to said it was because Timex got out the computer business - as if they thought all of us loyal Timex users would say, "Well Timex is gone. Let's all go buy Ataris and cancel our subscriptions to Sync!" When I reminded him that when Sync was first started there was no Timex computer - only the ZX80 - a Sinclair computer importad from England, he said he never thought of it like that. I suspect the true reason was a falloff of advertising income due to excessive ad rates.

- Timex Sinclair User is still dead, despite rumors to the contrary. The only hope I see is if they get dollar signs in their eyes over Sync's dropped advertisers.



TS USER

Another one bites the dust...

- Bad news for TS User (newsletter) fans. Despite the big talk in the April issue ("If you are a (TS User) reader then you are OK. TS User is full of optimism. TS User will continue production and coverage of Timex and Sinclair Microcomputer products...), in a recent phone conversation, Derek Stubbs informed me that his company was moving on (into robotics and software development - not Timex software), and dropping the Timex market. He had offered in that same issue to establish a clearinghouse for third party merchandise but, of course, that will not materialize now.

So what's left?
T-S Horizons. To be honest I hate to see Sync, TSU(mag), and TSU(nl) go. They were all good resources for us at T-S Horizons and other Timex users. But TSH is here to stay. We may be late occasionally but trust us - we plan to be around for a long time.

Some other worthy T-S dedicated publications are:
-SyncWare News, P.O.Box 5177, El Monte, CA 91734 (for the technically inclined - a nice publication).
-Basic, 3705 Biscayne Bl., Miami FL 33137 (BASIC programs for the ZX81/TS1000/1500).
-Syntax, RD 2, Box 457, Harvard, MA 01451.
-Also see USR News for some very good Timex Sinclair user group newsletters.

In addition there are two other magazines we would like to mention:
-The Computer Trader (1704 Sam Drive, Birmingham, AL 35235). This magazine covers all computers, from Apple to ZX81. In a typical issue there are four to six articles for the Timex-Sinclair. Currently they are running an excellent machine code tutorial series.
-The Computer Shopper (P.O.Box F, 407 S. Washington Ave., Titusville FL 32796). In a recent phone conversation with the magazines' editor, Stan Veit (who provided this issue's Guest Editorial), I was told that they are planning to add two new features for Timex-Sincalir users: a general information-type column and a telecommunications column specifically for Timex users.

Third-Party Support

Although a few companies are getting out of the Timex-Sinclair market (most notably Memotech), most of the significant software and peripheral companies are hanging in there. The folks at Byte-Back told us, their business has tripled since Timex "pulled the plug." 21st Century Electronics has a full line of TS1000 products, and is developing many TS2068 products. They have

A GUEST EDITORIAL

by STAN VEIT of The Computer Shopper

It is almost two years ago since I attended a press luncheon at the Tavern On The Green in Central Park, New York City. The purpose of the meeting was to announce that Timex Corp had formed Timex Computers and would take over the sales of Sinclair Computers in the United States. Clive Sinclair was there in smiling fellowship with the top brass of the Timex Corp. Their message to the press was that Timex (who had always manufactured the ZX80 and ZX81 low-cost computers), would now apply their marketing expertise to computers as well as watches. They would also provide extensive software and peripheral support to the Sinclair machines making them highly useful to small business, education, and science.

We members of the press were impressed. Here was a company who's watches and clocks had a reputation for low-cost and quality and they were going to bring the same qualities to low cost computers! We believed it as much as the Timex people did.

Timex upgraded the ZX-81, which they called the TS-1000 by adding additional memory. They advertised the computer and sold thousands of them throughout the country. The Timex TS-1000 became the introduction to personal computing for many people.

A few months ago Timex fired all the people left in the Computer division and folded it into the watch operation. Then last week they completely got out of the sales of computers, explaining that they couldn't make any money from them. Small wonder, the TS-1000 that cost me $99.00 plus $49.00 for the 16K Memory Expansion was now selling for $39.00, with the Memory Unit and some software!

I blame the VIC-20 and TRS-80 Color Computer and the TI 99/4A for the final death of the TS-1000. VIC-20 and CoCo showed the public that you could get a real computer for about the same price as the Timex plus the expansion module. They both had real keyboards and good software. You could get reliable cassette loads, or just plug in a cartridge and use the machine. There were third party expansion units that worked. Radio Shack and Commodore even provided a printer and disk drive for those who could pay for them.

Now nobody expects a company to stay with a money losing product, but when you sell millions of items to the public you have some responsibility toward those who bought the product on the basis of your claims about its merit.

Sinclair was not much help to the users of their machines, but they made no bones about it. You understood when you bought a ZX80 or ZX81 that you were pretty much on your own. Timex however promised to do better, they offered help from such things as the user hotline (1-800-24TIMEX) and the COMPUTER CLUB and a Newsletter. None of it ever worked. The Hot Line was usually busy and if you got through, the chances were that they couldn't answer your questions and they never called you back. The other support mechanisms for the 2068 might have worked if Timex hadn't fired Dan Ross and his staff.

The notice of the complete demise of the Timex Computers came through a one page P.R. Release from Ruder, Finn & Rotman who do the public relations for Timex. It was dated February 21, 1984 and said that Timex was withdrawing from the home computer business. It quoted Mr. C.M. Jacobi, Vice President of Marketing and Sales for Timex who said,' We believe instability in the market will cause the value of inventories to decline, making it difficult to make a reasonable profit. Further, we are concerned that those conditions will strain trade relations between manufacturers and retailers, a relationship which the company values very highly.' Note that he says nothing about relationships between the company and computer users! In regard to service of Timex Computers, Mr. Jacobi said, 'Consequently, the company has decided to withdraw from the retail portion of the home computer busisness. Consumer warranties will be honored and out of warranty service will continue'.

We called Mr. Jacobi to ask him to expand on the company's support policies. We asked questions about the level of support that Timex would continue to offer for software and the sale of proprietary chips and peripherals. We never got to speak with Mr. Jacobi. His spokesperson said

'We are considering the answers to your questions, we will call you when we have answers for you'. They never called back.

We then called the P.R. firm who said, 'We can not give you any additional information, call Mr. Jacobi at Timex.

I wish you could see some of the letters we have received from Timex/Sinclair users. They believed in the product and spent a lot of money on it. I myself, taught a course in Timex/Sinclair Programming and purchased a computer for $99, a 16K Memory Expansion for $49, a Printer for $99, a lot of books and software. I have about $400 invested in this machine and I know others who spent a lot more. We never expected a company like Timex to ditch us without any consideration. If they were as concerned for their customers as they are for their dealers, they would still be in the computer business.

Is the Federal Government going to let them get away with this one? Are Computer Owners as important as Snail Darters? It is one thing for a Company to go Chapter 10 or Chapter 11 (Bankrupt) and end belly-up, its another thing for a solvent company to just dump customers who bought their products in good faith. We are consumers who need protection, the Very Low Cost Computer User is an Endangered Species!

. Don't write me about it, write your Congressman!

secured the rights to Timex's word processor for the 2068, which they say is as good as <u>any</u> WP for <u>any</u> computer on the market. (21st Century, 6813 Polk St., Guttenburg NJ 07093, 210-869-2616). Gesang Associates (P.O.Box 452, Randallstown, MD 21133, 301-922-0767) also has a full line of TS1000 and 2068 products.

All of the following companies are expanding their product lines or maintaining status quo (in addition to those who have ads in this issue): G. Russell Electronics, E-Z Key, Aerco, E. Arthur Brown, Computer-Wear, Paul Hunter, Rompak. Thomas Woods has been especially vocal about his support for the Timex computer line.

<u>The Future?</u>

There are encouraging signs for Timex-Sinclair users.

-Timex User Groups are as active as ever.

-New companies with new products are still coming out: JRC Software (see T-S News); Minny Electronics Graphics and 64K package for the TS1000 (see last issue); Interface Design High Speed Interface (see TSH #3).

-Some companies and user groups are trying to "import" support for the TS1000 and 2068 from English Sinclair users who weren't subjected to Timex's demise.

Hopefully some good will come of it.

-As I stated above the TS1000 and 2068 may be resurrected in the near future under a new name.

One thing that is important for us to do now is to "strengthen the things that remain." Companies that are now supporting TS-related products need to know there are people "out there" who are hanging on and will buy their products. I think if we all band together we come through this in great shape.

Rick Duncan

READER INPUT

Dear Rick,

I would like to clear up a misconception that Art Gindin has about VU-CALC (TS-Horizons #3 Memocalc). I also experienced the same difficulty trying to get a print out on my Seikosha GP-100A printer and I also blamed the software.

The truth is that the Memotech interface and Seikosha printer will not accept Sinclair graphics (in this case the black bars that make up the grind in VU-CALC). Many Sinclair programs will not print on the Seikosha and those that do will print in a 32 column format. (Syber Software makes a cassette program called MEMOSHA which will correct this problem but I have not been able to get it to work and it requires extensive program modifications which I think would be beyond the capability of the type of reader Art is aiming his articles at). VU-CALC should not be "abandoned" however because it will accept text in the grid which Memocalc will not. The problem is not in the documentation. It works fine with the Timex 2040 printer and the ZX-81 printer. I have encountered many people who have run into this problem and it may be worth mentioning in your magazine. I did hear of one individual who reprogrammed VU-CALC with an acceptable ASCII symbol such as "$" instead of the graphic bars.

I hope you will forward this information to Art and hopefully to your readers. Apparently Memotech, Sinclair and Timex are not giving it out.

Very truly yours,

James A. McKnight
3708 Strayhorn
Mesquite, Texas 75150

Gentlemen,

Enclosed please find article on Timex Program VU-CALC for the T/S 2068.

I believe the letter points out sufficient problems to warrent making future 2068 users aware of.

Mr. Heifner has been a valuable asset to our group in evaluating and reviewing new programs for our newsletter. I hope you find his article as valuable as I did.

Peter J Callinicos
President
MILE HIGH CHAPTER TIMEX USERS

FROM: Mark A. Heifner
37 E. Colorado Ave.
Denver, CO 80210
(303) 744-1137
(303) 722-9067

TO: Timex Computer Corporation

Several weeks ago I purchased a copy of the Vu-Calc for the 2068 and was eager to use it for my business application, having found the Vu-Calc for the TS 1000 very useful, but rather limited. I was immediately impressed by the expanded number of rows and columns, the more creative method of working with data, and especially the almost limitless number of formulae that could be entered - a severe problem with the TS1000 program. After a few minutes I realized that the program was essentially useless for any serious applications and I had to return it for a refund.

Two aspects in the 2068 Vu-Calc make it difficult to use. One is the lack of separation between the boxes. When all the boxes are filled on a certain portion of the display the only way to distinguish between one box and an adjacent one is to move the cursor around. All the numbers run together, end to end. Although that problem is manageable but a nuisance in comparison to Vu-Calc for the 1000, one other problem cannot be remedied in any way.

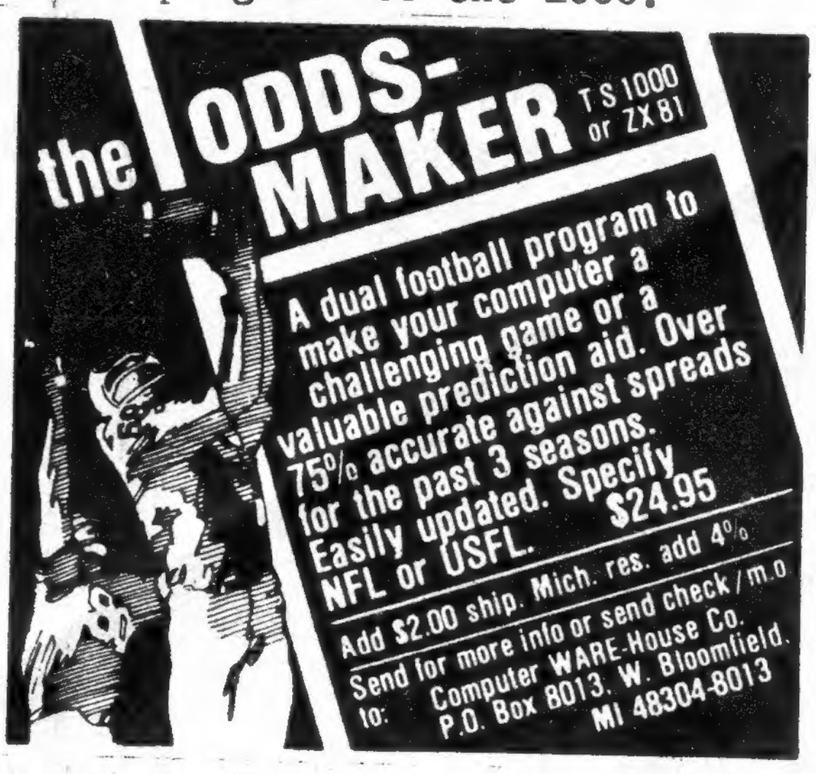
In writing the program it apparently was decided that a display of 4 columns instead of 3 was important. Because of the limited space on the 2068 display in normal mode it was necessary to drop the lines separating the boxes and reduce the number of numeric entries in each box to 7 from the 8 as in the 1000 version.

Vu-Calc, like its big brothers and sisters Visicalc and its variations for the larger computers, is most useful for working with dollars and cents. Seven entries, including the decimal point, limits the program to values less than $10,000.00 whereas the 1000 version allows figures up to $100,000.00. I am sure you can see that this limitation makes the program useless for all but the simplest application.

As I see it, the deficiencies of the 1000 program were corrected quite well, but in the process nobody apparently noticed that a new set of problems had been created that produced a program which is almost useless. The 2068 is a very capable machine with lots of dandy features and I was both surprised and disappointed that such a trashy program had been allowed to go out on the open market. A few suggestions might be helpful to correcting this situation with this program.

A lot of people I know that have the 2068 have gone to using monitors rather than a TV. The picture is so much better on the monitor and good monitors are nearly as cheap as a good black and white TV. Why not produce a Vu-Calc which uses the expanded display modes? If a printout is needed on the 2040 printer I am sure it could be worked out that two consecutive printouts would be sent to the printer with each printout showing half the screen. Alternatively, you might return to a 3 column display with separations or even a 2 column, dual screen display or some variation on that. The important thing is to maintain many of the features already there but allow at least 8 numeric entries per box. Maybe it could be worked out that the user would even be allowed to select the number of entries per box, up to some reasonable limit and the display would adjust itself accordingly. I doubt that having more than 9 entries per box would be useful. I do feel that a minimum eight is needed.

In conclusion, spreadsheet programs are so very useful it seems a shame to produce a program for the 2068, a very capable machine, that is essentially useless when compared to the similar program for the 1000.



INVASION OF RUSSIA, JULY, 1941

16K, 32K, or TS2068

You command the German Invasion of Russia to take Moscow.

T/S 2068 Game has:
- Large map of Eastern Europe and U.S.S.R.
- Divisional and Brigade Strength—Panzer, Infantry, Calvary, etc.
- Supply Lines • Zone of Control
- Effects of terrain and weather
- Actual Reinforcements
- No fast reflexes required.

32K—IDENTICAL TO TS/2068, EXCEPT:
- Large 4 screen map board • No effects of terrain

16K—IDENTICAL TO 32K GAME, EXCEPT:
- 1 screen map board

T/S 2068 — $17.95
32K — 17.95
16K — 14.95
+ $2.00 S & H

VISA & Mastercard Accepted

Dealer inquiries welcome

SHARP'S
127 NINE MILE RD.
SANDSTON, VA 23150
(804) 737-4895

© Copyright 1983, 1984

A message from THOMAS B. WOODS

Dear Fellow Timex Computer Owner,

The bad news that Timex has dropped out of the personal computer market comes to me as a tremendous disappointment. I put my faith in their machines and for the last two years have worked long and hard to build a software business with a reputation that I think is one of the best in the industry.

In the current situation all of us are wondering what will happen next. There is one thing I'll say, however. When the dust settles, I intend to still be here. I am determined to continue providing quality software for both the TS1000 and the new TS2068.

I owe my business to you who use these two marvelous machines, and you deserve far more than to be simply dropped and forgotten. I for one, intend to keep my computer running. From me, you can expect to see an optimistic future of more programs and more applications for the Timex.

By pulling together, by communicating, and by sharing ideas and talent, I am convinced that we Timex computerists will emerge from the present chaotic state unscathed, and the computer itself will be as strong and popular as ever.

It is in this rallying spirit that I announce my latest product: PRO/FILE 2068. The original release date was scheduled for June 1984, but with circumstances being what they are, I feel that this program released now, will demonstrate my dedication to the support of the TS2068.

The manual for PRO/FILE 2068 is not yet complete, but the program itself is finished, extensively tested, and is ready to be shipped with abbreviated operating instructions and a promise that the manual--expected to be 100 pages--will be mailed to every customer just as soon as it is printed.

Enclosed is a detailed description of PRO/FILE 2068. You'll notice right away that this program is a significant advance over the older but still extremely popular ZX Pro/File used on the TS1000 and 1500.

PRO/FILE 2068 is a masterpiece if I say so myself!

As always, GOOD COMPUTING!

Thomas B. Woods
P.O.Box 64, Jefferson, NH 03583
(603) 586-7734

FOR JUST $24.95 YOU CAN
GRAB THE BULL BY THE HORNS

TOCO TECHNOLOGY
announces Stock Market Software
for your TIMEX 1000 and TS 2068

The TECHNI-STOCK SOFTWARE SYSTEM is a stock market analysis program designed by a pro trader for use by pros and beginners alike. The program analyzes your favorite stocks using statistical and technical averages in order to predict future stock price trends.

The System Includes:
1) HANDSOME BINDER
2) 28 PAGE INFO GUIDE
3) RESEARCHED WORKSHEET
4) REFERENCE SYSTEM
5) PROGRAMMED CASSETTE

To Order: Send us the names of your favorite 6 stocks along with a check for $24.95 for the TIMEX 1000 version (9 stocks and $34.95 - TS 2068) to:

TOCO TECHNOLOGY
P. O. BOX 98
SANTA CLAUS, IN 47579

for use 16K or more

add $3 shipping

ZX PRO/FILE

A machine language information storage and retrieval tool for 16-64K.

- ★ **Multi-word search capability**
- ★ **Instant file access**
- ★ **Ordered displays**
- ★ **Definable printer functions**
- ★ **Totally flexible file size**
- ★ **59 page tutorial manual**
- ★ **Newsletter updates**

THE MOST ADVANCED FILE MANAGER YOU CAN GET FOR THE TIMEX

Ask for free specifications or send $16.95 for cassette and manual to:

THOMAS B. WOODS
P.O. Box 64, Jefferson, NH 03583
Phone: (603) 586-7734
Visa, Mastercard welcome

TIP PROGRAM

For the TS 2068

ZX81/TS1000/1500

```
   1 REM TO:T-S HORIZONS
           PROGRAM DEPT.
   5 PRINT                                "
THIS IS A LISTING TECHNIQUE THAT
ALLOWS YOU TO SEE,IN THE LISTING
EXACTLY THE SAME AS THAT PRINTED
ON THE SCREEN.(WHEN THE PROGRAM
IS RUN)"
 100 PRINT                                "
    1
```

```
A SCREEN DISPLAY IS EASIER
TO PLAN INITIALLY, OR TYPE
FROM LISTINGS,IF:THE PRINT
COMMAND LINE IS PADDED OUT
WITH SPACES.(BEFORE QUOTE)
```

```
"
 110 PRINT                                "
LINE 120 SHOWS THE SCRAMBLE SEEN
IN MOST PROGRAM LISTINGS. THEY
ARE DIFFICULT,AND EYE-STRAINING
TO TYPE FROM."
 120 PRINT "
    2
```

```
A SCREEN DISPLAY
TO PLAN INITIALLY
FROM LISTINGS,IF:
COMMAND LINE IS P
WITH SPACES.(BEFO
```

```
IS EASIER
, OR TYPE
THE PRINT
ADDED OUT
RE QUOTE)
```

```
"
 130 PRINT                                "
IT IS BEST TO PRINT THE DESIRED
SCREEN(AS IN LINE 100),AND THEN
RE-EDIT THE LINE AND CHANGE THE
COMMAND AFTERWARDS IF REQUIRED."
 140 LPRINT
"
    3
```

```
A SCREEN DISPLAY IS EASIER
TO PLAN INITIALLY, OR TYPE
FROM LISTINGS,IF:THE PRINT
COMMAND LINE IS PADDED OUT
WITH SPACES.(BEFORE QUOTE)
```

```
"
 145 PRINT                                "
(LET STATEMENTS CAN ALSO BE USED
AS SHOWN IN LINE 150.)"
 150 LET P$=                              "
    4
```

```
A SCREEN DISPLAY IS EASIER
TO PLAN INITIALLY, OR TYPE
FROM LISTINGS,IF:THE PRINT
COMMAND LINE IS PADDED OUT
WITH SPACES.(BEFORE QUOTE)
```

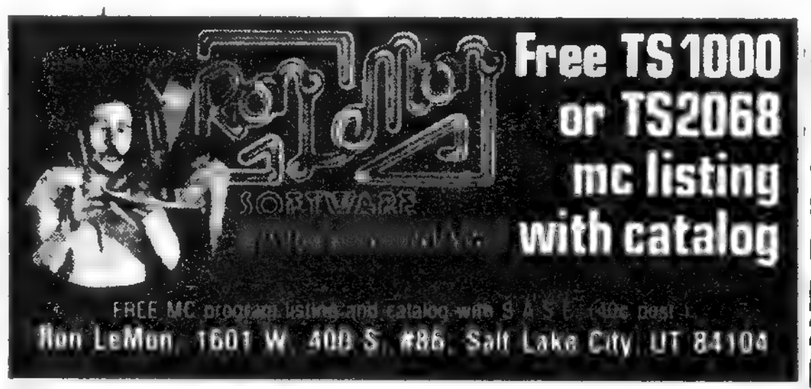
```
"
 160 PRINT P$
 170 PRINT                                "
LISTINGS ARE EASIER TO DECIPHER
USING THIS METHOD,ALTHOUGH EXTRA
MEMORY IS USED."
 180 REM
```


ROIS R.HARDER
995 SHAKESPEARE AVE.,
NOR H VANCOUVER,B.C.
V7P 1E7,CANADA

Dec Bin Hex Converter

$3.75
CAN.

Order from:
ROIS HARDER
995 Shakespeare Ave.,
N. Van., B.C., Canada V7K 1E7(604) 980 4167



TIMEX-SINCLAIR programs to save you money. Payoff shows how much credit card and charge accounts really cost, how to pay them off and save **$$$**. Payout shows where your hard-earned money is going. On cassette, $12.95 each post-paid. Specify TS-1000 w/16K, TS-1500 or TS-2068. Ace Software, 2 East Oak Avenue, Moorestown, NJ 08057

Send SASE for information.

GOLFERS

GOLF HANDICAPPER is a menu driven 16K BASIC program for your TS 1000, 1500, ZX81 which computes/saves/updates USGA handicaps for up to 48 players. With a printer attached you can print out scores and handicaps for all players. High quality cassette tape shipped in hard box and accompanied by full documentation. Send $20 ck/mo to John Carson 11200 Lockwood Dr. #307 Silver Spring, MD 20901

*****MICRO-LOAD*****
HAS
UNUSUAL SOFTWARE FOR
TS1000/ZX81
BOX 1095, T OR C, NM
87901

CLASSIFIED AD

PROGRAMS for SCIENCE/HEALTH/MATH/ELECTRONICS/HOME. Free catalog for SASE and 40 cents postage. MAH Software,341 West Eagle Lake Drive, Maple Grove, MN 55369.

LEAST SQUARES METHOD OF CURVE-FITTING POINT DATA TO $y=ax+b$ or $y=be^{ax}$

by Ken Lewis

The standard approach to fitting a set of data points to a line $y=ax+b$ is to use the method of least squares. The least squares method provides an unambiguous fitting procedure which minimizes the deviation of the data points from the fitted line in the following sense. Let Y_i represent an experimental value and let y_i be a value from the equation $y=ax_i+b$, where x_i is a particular value of the variable which is assumed to be free of error. It is desired to obtain the "best" values of a and b such that for $e_i = Y_i-y_i=Y_i-ax_i-b$,

the error $E=\sum_i^N e_i^2=\sum_i^N(Y_i-ax_i-b)^2$ is a minimum, where N is the number of data points. Since x_i and Y_i are unaffected by the choices of a and b, the minimizing relations are $dE/da=0$ and $dE/db=0$. These result in the two equations:

$$a\sum x_i^2+b\sum x_i=\sum x_iY_i$$

$$a\sum x_i + bN = \sum Y_i$$

Solving for a and b, these values can be expressed in terms of the input data only:

$$a=\frac{\begin{vmatrix}\sum x_iY_i & \sum x_i\\ \sum Y_i & \sum N\end{vmatrix}}{\begin{vmatrix}\sum x_i^2 & \sum x_i\\ \sum x_i & \sum N\end{vmatrix}} \qquad b=\frac{\begin{vmatrix}\sum x_i^2 & \sum x_iY_i\\ \sum x_i & \sum Y_i\end{vmatrix}}{\begin{vmatrix}\sum x_i^2 & \sum x_i\\ \sum x_i & \sum N\end{vmatrix}}$$

This is the least-squares method. The approach can be applied to fit data to the curve $y=be^{ax}$ in the following manner: take the log of both sides to get $\ln y=\ln b+ax$, and define $y'=\ln y$ and $b'=\ln b$. Now we have $y'=ax+b'$, so the method outlined above applies.

THE PROGRAM

To execute, this program, enter the "RUN" mode. The first prompt is "INPUT PAIRS OF DATA" and "ENTER POINT 1". The point is entered as follows: x_1, enter, y_1, enter. The new prompt is "ENTER POINT 2" and point (x_2,y_2) is entered, and soon, the answer then appears with a and b expressed numerically.

EXAMPLE

Fit a straight line to the given data using the least-squares criterion.

x	1.1	2.9	4.3	6.2
f(x)	50	43	28	25

After entering the "RUN" mode, we immediately get the prompt "INPUT N-NO. OF DATA". Since there are 4 points, enter the number 4. In response to the prompt "ENTER POINT 1", the values 1.1 and 50 are entered. We are then prompted;"ENTER POINT 2", and the values 2.9 and 43 are input, and so on. The answer is printed out, i.e.,

"THE LINE WHICH FITS THE DATA IS:

Y=5.3011618*x + 55.716711 "

```
 10 REM LST5QR
 20 REM LEAST SQUARE FIT TO
 30 REM A LINE FOR N DATA
 33 DIM X(100)
 36 DIM F(100)
 40 PRINT "INPUT N-NO. OF DATA"
 50 INPUT N
 55 CLS
 60 PRINT "INPUT PAIRS OF DATA"
 70 FOR K=1 TO N
 75 INPUT X(K)
 80 INPUT F(K)
 90 NEXT K
100 LET SUM1=0
110 LET SUM2=0
120 LET SUM3=0
130 LET SUM4=0
140 FOR L=1 TO N
150 LET SUM1=SUM1+X(L)
160 LET SUM2=SUM2+X(L)*X(L)
170 LET SUM3=SUM3+F(L)
180 LET SUM4=SUM4+X(L)*F(L)
190 NEXT L
200 LET D=1/(N*SUM2-SUM1*SUM1)
210 LET A0=(SUM2*SUM3-SUM1*SUM4
)*D
220 LET A1=(-SUM1*SUM3+N*SUM4)*
D
230 PRINT "THE LINE WHICH FITS
THE DATA IS:"
240 PRINT ""
250 PRINT "Y= ";A1;"*X + ";A0
260 STOP
```

```
 10 REM LST5QX
 20 REM LEAST SQUARE FIT TO
 30 REM B*EXP(A*X) FOR N DATA
 33 DIM X(100)
 36 DIM F(100)
 40 PRINT "INPUT N-NO. OF DATA"
 50 INPUT N
 55 CLS
 60 PRINT "INPUT PAIRS OF DATA"
 70 FOR K=1 TO N
 75 INPUT X(K)
 80 INPUT F(K)
 82 CLS
 85 LET F(K)=LN F(K)
 90 NEXT K
100 LET SUM1=0
110 LET SUM2=0
120 LET SUM3=0
130 LET SUM4=0
140 FOR L=1 TO N
150 LET SUM1=SUM1+X(L)
160 LET SUM2=SUM2+X(L)*X(L)
170 LET SUM3=SUM3+F(L)
180 LET SUM4=SUM4+X(L)*F(L)
190 NEXT L
200 LET D=1/(N*SUM2-SUM1*SUM1)
210 LET A0=(SUM2*SUM3-SUM1*SUM4
)*D
220 LET A1=(-SUM1*SUM3+N*SUM4)*
D
230 PRINT "THE EXP WHICH FITS T
HE DATA IS:"
240 PRINT ""
250 PRINT "Y= ";EXP (A0);"*EXP
";A1;"*X"
260 STOP
```


PROGRAM EDUCATION

• NEW FOR TIMEX/SINCLAIR 1000/ZX81 16K.

Dual Purpose Academic Programs

- Challenging, Self-Pacing ... Tailored to Specific Interests and Abilities.
- Software Written In Basic ... Easily Understood ... Not a Bit of Machine Code.

Full Documentation Package

☐ **RISING SUN** **$14.95**
Tour Japan, facts, geography (12-Adult)

☐ **LONG DIVISION TUTORIAL** . . **$12.95**
A dedicated tutor ... not flash cards (8-10)

☐ **AREAS OF CONCERN** **$13.95**
Areas, perimeters, discovery, fun (10-13)

☐ **THANKS MR. NEWTON** **$13.95**
Laws of motion, serious graphics (16-Adult)

☐ **VINS FRANCAIS** **$14.95**
French wine guide (Adult)

(CT residents add 7.5% sales tax; Outside USA add 15%)

TAG SOFTWARE

All software on high quality cassettes and is replacement guaranteed.

To order, send check or money order to:

TAG SOFTWARE
P.O. BOX 688
NAUGATUCK, CT 06770

TIMEX/SINCLAIR 1000/ZX81
TRADEMARK TIMEX SINCLAIR

RADIO SHACK COMPUTERS

AT DISCOUNT PRICES

* FULL RADIO SHACK WARRANTY
* PURE RADIO SHACK EQUIPMENT
* MAIL ORDER DISCOUNT PRICES
* FREE SOFTWARE WITH EACH COMPUTER SOLD
* FREE BOOK "HOW TO GET RICH WITH YOUR MICROCOMPUTER" WITH EACH COMPUTER SOLD
* NO SALES TAX ON OUT OF STATE SALES
* FULL LINE OF PRODUCTS

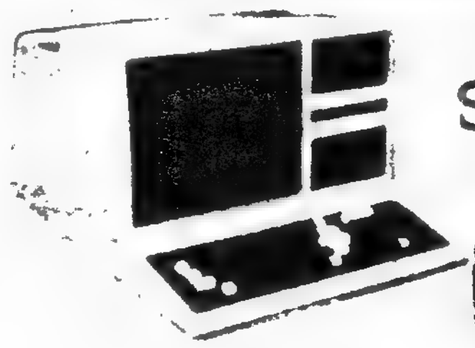
TRS-80 COMPUTERS

• PURE RADIO SHACK EQUIPMENT •

FREE PLEASE WRITE AND REQUEST
• CUSTOMER DISCOUNT PRICE
• MANUFACTURE WARRANTIES
TRS 80 TANDY CORP

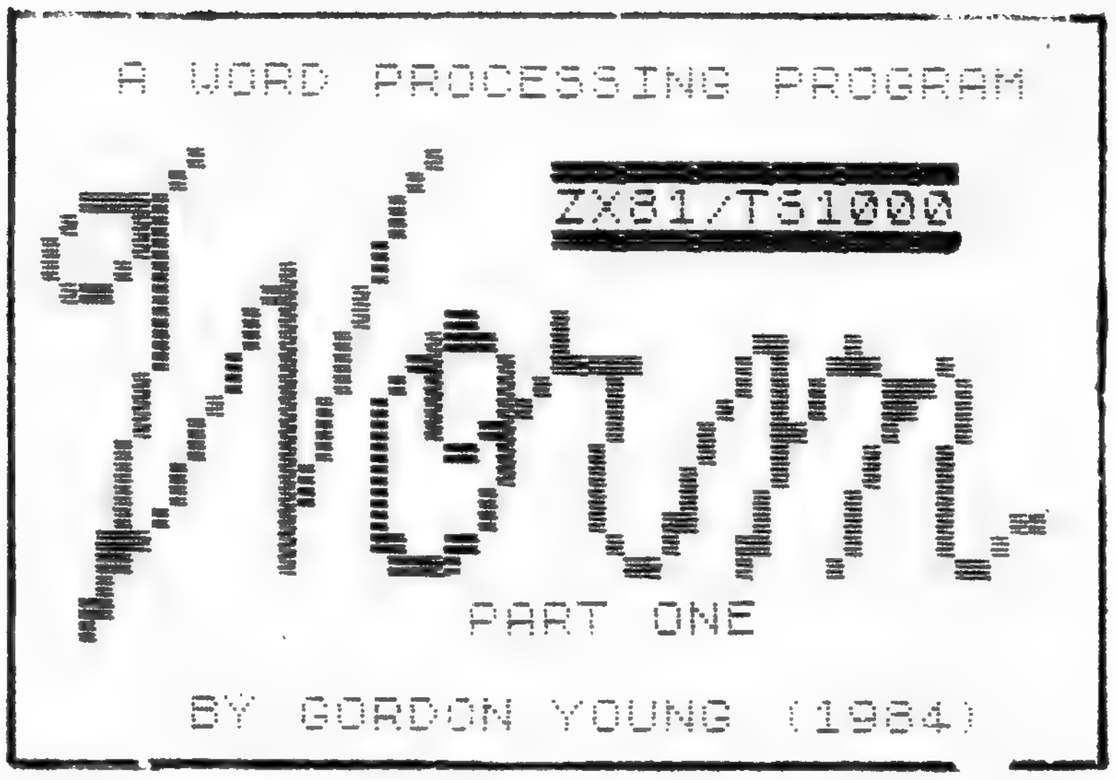
OHIO RESIDENTS ADD SALES TAX

ORDER FROM OMAR ELECTRONICS
521 E. MAIN ST.
JACKSON OHIO 45640
(614)286-1418 CALL OR WRITE FOR DETAILS



ALWAYS AT SALE PRICES

MODEL 4



Do you need a word processor that will work on any printer with the interface you have? Would you like to write your text in 30, 40 or whatever column width you want? I know I did! MEMOTEXT requires the MEMOTECH interface, WORDSINC II only prints on the Timex printer and the others (those with names I forgot after finding out they did not work very well), fell short of working on the machine code, I came up with a usable program, which I have called "WORM", for lack of a better name. This program has:

**Left/Right justification
**User defined column width
**6,000 character text file
**Dual mode operation
**Global editing (insert/delete)
**Character counter
**Upper/Lower case (for full size printers)
**Machine code fast typing
**Wrap around screen operation
**And more

The nice thing about this is that, you can do all the programming for it by reading this and 2 more issues of this magazine.

If you have never worked with machine code and are afraid to tackle this, don't be. Just follow directions closely. This month I will provide you with the first steps. Once we get the machine code entered, the rest will be much easier. There is over 2K of machine code that is entered into 4 REM lines. I will provide you with an assembler to enter the codes and a listing of the codes in each line. In addition, a checksum can be used to test your entries for assurance. We will make your 16K TS-1000 computer a very usable word processor.

Begin by turning on the computer and putting it in the FAST mode. Now make line 1 just like that in figure 1. After typing all of this in, press ENTER. It must be exactly like the figure shown! When this has been done, create line 2 with exactly the same REM statement as in figure 1. Do this by using the EDIT command, then press DELETE, which will erase the line number "1". Then press 2. Repeat this procedure to create lines 3 and 4, with the same REM statement.

At this time, SAVE everything onto tape! DO NOT attempt to edit these lines again.

```
1 REM 0
2 REM 0
3 REM 0
4 REM 0
5 REM 0
6 REM 0
7 REM 0
8 REM 0
9 REM 0
10 REM 0
```

FIGURE #1

```
9977 LET N=15514
9978 LET M=0
9979 INPUT A
9980 IF A>300 THEN GOTO 9980
9981 POKE N,A
9982 PRINT AT 20,M;A
9983 LET N=N+1
9984 LET M=M+6
9985 IF M<26 THEN GOTO 9979
9986 LET M=0
9987 SCROLL
9988 GOTO 9979
9989 IF A>555 THEN GOTO 9999
9990 IF A=555 THEN GOTO 9997
9991 LET N=N-1
9992 IF M=0 THEN LET M=30
9993 IF M<26 THEN LET M=M-6
9994 IF M=-6 THEN LET M=0
9995 PRINT AT 20,M;"    "
9996 GOTO 9979
9997 SAVE "WORM"
9998 GOTO 9979
9999 STOP
```

FIGURE #2

Now, enter the BASIC assembler of figure 2. This will be used to enter the codes. When entering codes for line 2, 3 and 4, you will have to change the address in line 9977 (more on that later). You should now have four REM lines and the assembler starting at address 9977. Again, SAVE everything onto tape (use the other side of the tape just as a precaution).

When using the assembler, you will be entering the codes as listed in figure 3. In using the assembler, you simply enter a code (press ENTER) and continue until you reach the end of the listing. The machine code list has 6 codes across and are to be entered left to right, top to bottom. You can make a correction by pressing 333. This will backspace and correct a wrong entry. You might want to stop and SAVE your entries along the way and to do this, just get the recorder ready and press 555. When all the codes have been entered, enter 999 to stop.

Now you should have line 1 finished and can check your entries by a simple checksum routine that adds each number in the line to produce a sum of all your entries. Do this by entering:

```
8000 LET Y=0
8005 FOR N=16514 TO 17154
8010 LET Y=Y+PEEK N
8015 NEXT N
8020 STOP
```

If you RUN the program at line 3000 you should get the sum: 58243

If this is the answer you got, then so far, line 1 is complete! If not, you need a program that will PEEK each address between 16514 and 17154 to check your entries. I have found that some of my readers will accidently make a wrong entry and not get the checksum number correct. If this is your case, add these lines:

```
8050 FOR N=16514 TO 17154 STEP 6
8055 PRINT AT 19,0;PEEK N;TAB 5;
PEEK (N+1);TAB 10;PEEK (N+2);TAB
 15;PEEK (N+3);TAB 20;PEEK (N+4)
;TAB 25;PEEK (N+5)
8060 SCROLL
8065 NEXT N
```

This will help locate an error. You will still need to determine the address and make the correction.

Next month I will, give you the codes for line 2 and 3. I can't over emphasize the importance of your machine code entries. A wrong entry could crash the program or worse, write a hundred wrong entries over others, so be careful! You should have no problems, but if you do, write me and I will help you out. More in the next issue!

Gordon Young
P.O.Box 2411
Vista, CA 92083

LINE 1 REM CODES

33	117	10	1	185	101
144	101	185	101	5	9
5	9	33	151	64	229
195	214	64	33	158	64
229	195	255	64	33	165
64	229	195	85	65	33
172	64	229	195	220	65
33	179	64	229	195	251
65	33	186	64	229	195
9	67	33	193	64	229
195	69	65	33	200	64
229	195	107	66	33	207
64	229	195	133	66	33
151	64	229	195	184	66
33	131	64	54	0	35
35	54	0	35	54	144
35	54	64	101	35	54
35	54	64	101	35	54
144	35	54	64	101	35
54	144	35	54	64	101
35	54	144	35	54	0
6	64	35	1	181	2
237	74	17	28	4	1
140	64	10	131	119	35
35	21	122	254	0	32
245	35	35	254	93	237
176	62	32	42	12	64
201	148	237	74	54	3
254	0	40	245	233	168
61	24	245	225	0	177
173	183	184	155	0	0
170	171	185	0	0	0
0	0	0	0	0	0

21	122	254	101	32	5
123	254	143	40	11	126
254	118	32	1	43	86
119	11	24	223	0	126
254	118	32	1	43	54
0	58	132	64	254	31
32	7	33	213	65	209
195	144	66	225	233	0
0	0	0	0	205	187
2	124	198	2	56	10
68	77	205	189	7	6
0	78	66	3	1	100
0	121	50	131	64	254
100	40	227	225	233	68
131	64	254	117	32	4
225	195	174	66	254	0
32	4	225	195	186	64
254	119	32	4	225	195
213	68	254	112	32	4
225	195	240	67	254	113
32	4	225	195	63	68
254	114	32	4	225	195
0	50	52	41	42	0
179	42	12	64	1	50
2	237	74	58	132	64
237	91	134	64	14	64
254	0	40	5	35	13
61	24	247	54	131	121
254	0	40	13	35	126
254	118	32	1	35	254
119	13	19	24	238	42
12	64	1	50	2	237
74	58	132	64	254	0
40	4	61	35	24	248
237	91	134	64	1	64
1	27	43	120	254	0
32	5	121	254	0	40

136	68	254	115	32	4
225	195	104	68	254	116
32	4	225	195	76	69
225	233	27	27	27	27
27	42	134	64	237	91
136	64	124	186	32	10
125	187	32	8	58	131
64	119	205	233	33	97
66	229	195	167	68	42
134	64	24	238	0	0
0	0	0	1	144	64
30	4	11	10	254	0
40	4	61	2	24	9
62	0	2	29	163	254
0	32	237	225	233	1
0	0	11	120	177	32
251	225	233	0	42	12
64	62	33	35	61	254
0	32	250	237	91	12
64	1	115	2	237	176
52	0	50	132	64	225
233	0	0	0	201	0
0	0	0	33	132	64	52
0	0	42	134	64	35	34	134
64	42	138	64	35	34
138	64	225	233	0	0
0	0	0	42	134	64
237	91	138	64	124	186
32	4	125	187	40	30
126	43	119	35	35	124
186	32	247	125	187	32
243	126	43	119	35	54
0	43	34	138	64	42
134	64	43	34	134	64
225	233	0	0	0	118

FEATURE

BANK SWITCHING FOR THE TS 1000 - PART 2

By: Paul Hunter

The second part of this series will describe some of the hardware so that construction work can progress while the software is developed and tested.

It seemed probable from the outset that more and more peripherals would be added to the system as time passed so the first task was to build an expansion interface to buffer the TIMEX/SINCLAIR signals. Such expansion boards have been described in the past and this one is not much different.

EXPANSION BOARD

The interface described here uses a "COMPUTER CONTINUUM" board (since I had one) but the circuit can equally well be put together on perforated project board with wire wrap or point-to-point wiring. The "COMPUTER CONTINUUM" board is very well made, costs $35, and makes life a lot easier. The board comes with provision for memory-mapped I/O in the 8 to 16K region and as a result the decoding suggested is quite complicated. Without much loss of versatility, the four ICs used in the decoding were replaced by one-half of a 74LS02 quad NOR gate (see Figure 4) -- partly because I did not have the 7425 required. The only restriction caused by this modification is to disallow use of internal RAM -- it is disabled by ty ing RAMCS high.

The buffer ICs used on the board are a 74LS245; three 81LS95; and one 74LS365 (or 367). If you put together your own interface you might prefer to use a combination of one 74LS245 (for data) and three 74LS244 (for address and control). Such an interface has been described by JOHN OLIGER in the WINTER and SPRING issues of SQ. If you wish to modify a "COMPUTER CONTINUUM" board for this interface, the instructions are summarized in Figures 2, 3, and 4. The interface is described in Figure 1. Note that the signal $\overline{\text{BUSEN}}$ is the interface buffer enable (ACTIVE LOW).

After building the interface, test it by plugging it into the computer with a peripheral RAM pack. Test the use of the 8 - 16K space if you have a device that uses that area. The "COMPUTER CONTINUUM" board can be inserted into the rear expansion socket of a ZX81/TS1000 just like any other peripheral. Alternatively, the ZX81/TS1000 board can be removed from its case and plugged in vertically -- this is useful when an external keyboard has been, or will be, added.

MEMORY INTERFACE

The next step in the project, the memory interface, was built on a RADIO-SHACK project board 276-152A using wire-wrap techniques. This board has a male 22/44 0.156" edge connector which matches the sockets on the expansion board. The female connector to match is readily available at RADIO-SHACK and elsewhere. The wire-wrap connections used allow easy modification and later expansion (and also easy correction of design errors). The position of the memory interface in the scheme of things is shown in Figure 5 and the schematic for the part constructed this month is illustrated in Figure 6.

Operation of the circuit is as follows: The device is mapped in I/O space to avoid any conflict with memory. The 74LS30 generates a negative-going pulse when A0,A1,A2,A5, and A6 are high and $\overline{\text{I/ORQ}}$, $\overline{\text{WR}}$, and A7 are low. This pulse is inverted and used as the clock-pulse for the 74LS74 D-type flip-flop. On receipt of the clock-pulse the flip-flop latches the data on A3 and A4. The LEDs provide confirmation. Note that no data lines are used in the device -- this uses up more of the I/O space but is economical in hardware. The clear inputs to the 74LS74 are automatically

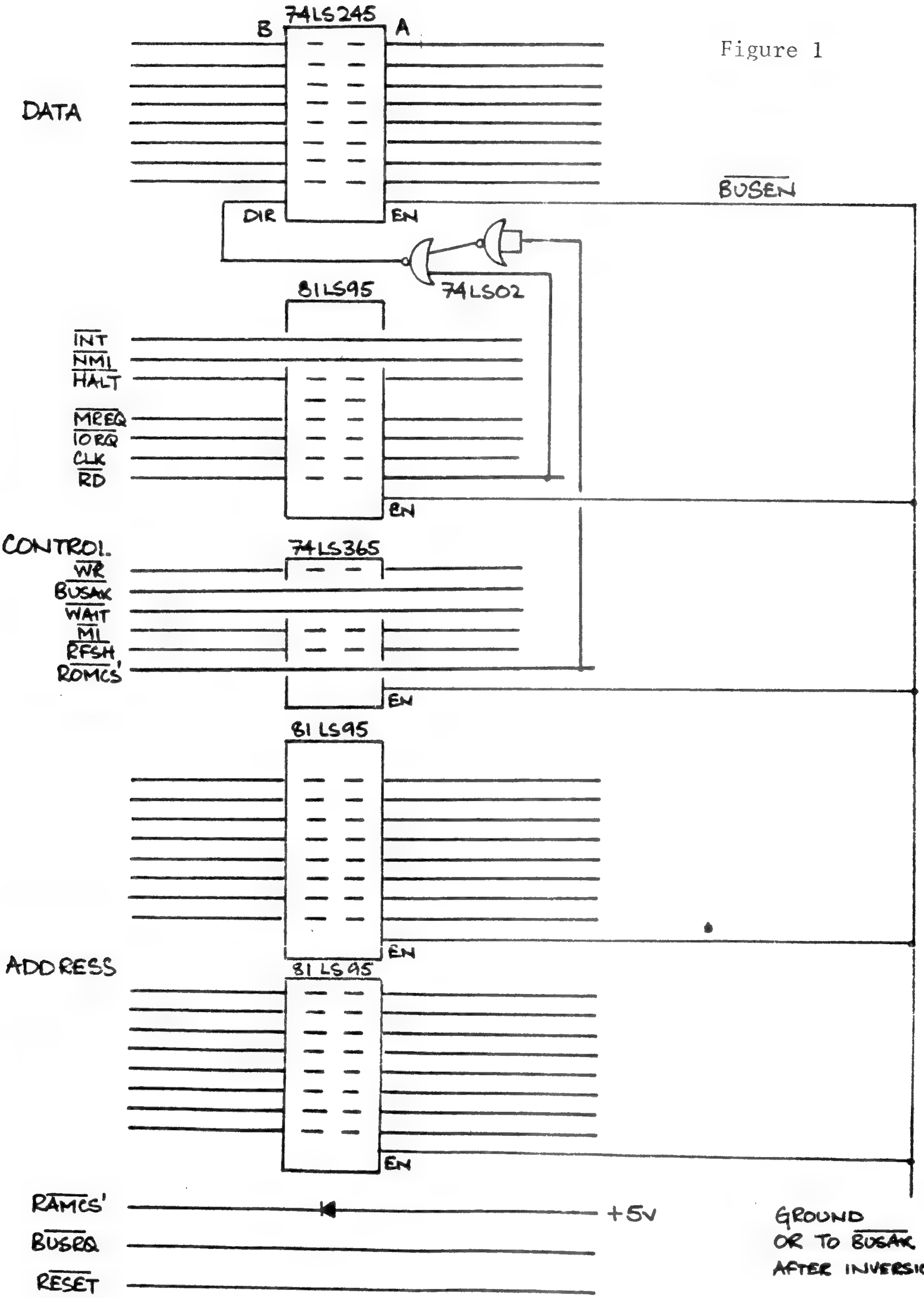

74LS245
B
A
DIR
EN
DATA
BUSEN
74LS02
81LS95
INT
NMI
HALT
MREQ
IORQ
CLK
RD
EN
CONTROL
74LS365
WR
BUSAK
WAIT
M1
RFSH
ROMCS'
EN
81LS95
EN
81LS95
ADDRESS
EN
RAMCS'
+5V
BUSRQ
RESET
GROUND
OR TO BUSAK
AFTER INVERSION

Figure 1

brought low on power-up or upon loss of power.

After building this part of the interface try the following test. Plug the board into your expansion interface (or with a suitable socket directly into your computer) and power up. Neither LED should be lit at this point. Since the SINCLAIR BASIC has no IN Or OUT commands, the routine to service this port must be written in machine code. Enter the program:

```
10  REM 123
20  INPUT A
30  POKE 16515,A
40  RAND USR 16514
```

Then poke in the machine code:

```
POKE 16514,211
POKE 16516,201
```

Now the program can be RUN. When prompted, enter the address 111 -- the first LED should light. RUN the program again and enter 119 -- the first LED should go out and the second one should come on. The address 103 will clear the latch and the address 127 will light both LEDs. The outputs of the 74LS74 will be used to switch between memory banks.

In next months installment the memory bank will be described, the memory interface will be completed, and if there is room, some more software will
be discussed.

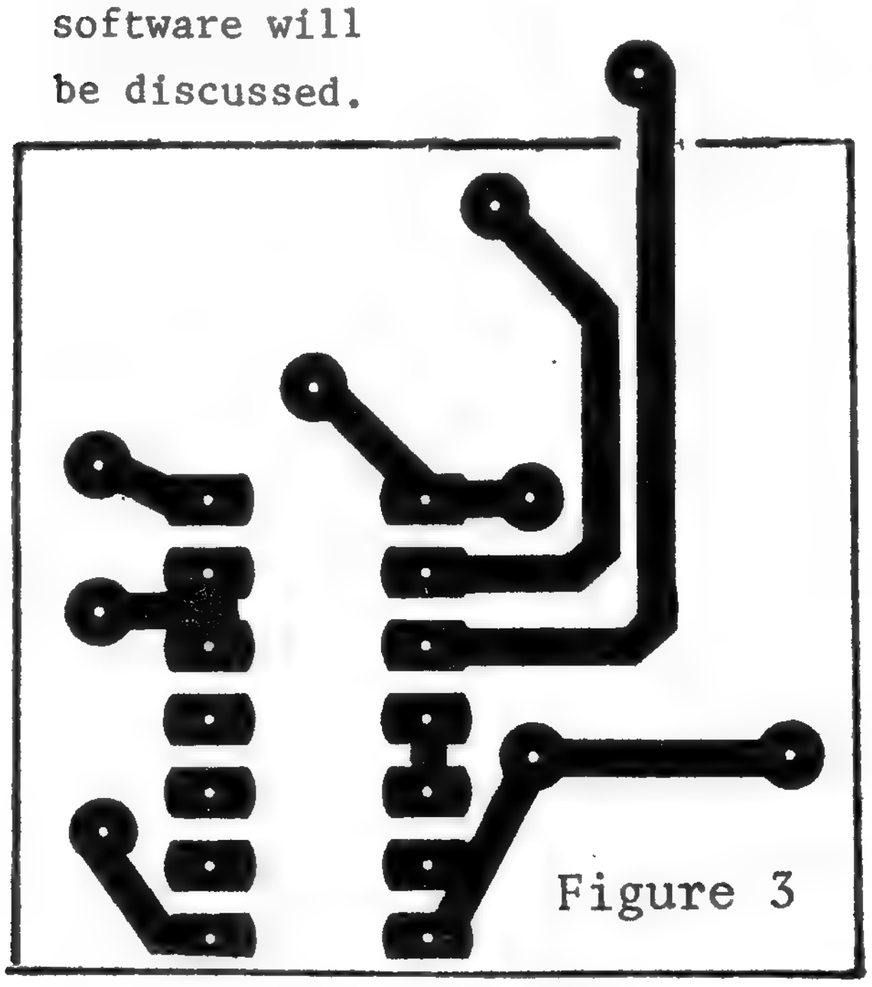


Figure 3

Figure 2 Modifications to the COMPUTER CONTINUUM expansion board

1. Omit sockets IC1, IC2, IC4, and IC9

2. Jumper together:

on socket 7	pins 13 and 14	($\overline{\text{NMI}}$)
	pins 15 and 16	(INT)
on socket 8	pins 6 and 7	($\overline{\text{ROMCS}}$)
	pins 9 and 10	($\overline{\text{WAIT}}$)
	pins 11 and 12	(BUSAK)

3. Disengage the IC pins from these jumpered sockets

4. Replace diode D1 with a wire jumper

5. Add the small piggy back pc board illustrated in Figure 3 over the space normally occupied by IC1, IC2, IC4 and IC9. Signals to this pc board are derived as follows:

$\overline{\text{BUSEN}}$	pin 2 of IC9	(grounded by jumper)
$\overline{\text{ROMCS}}$	pin 6 of IC1	
RD	pin 5 of IC9	
DIR	pin 8 of IC9	high for read by CPU low for write
GND	pin 7 of IC2	
+5V	pin 14 of IC2	

6. Insert a 74LS02 into the piggy back board

7. Note that both J1 and J2 on the expansion board are inserted to supply +5V and +9V to the expansion

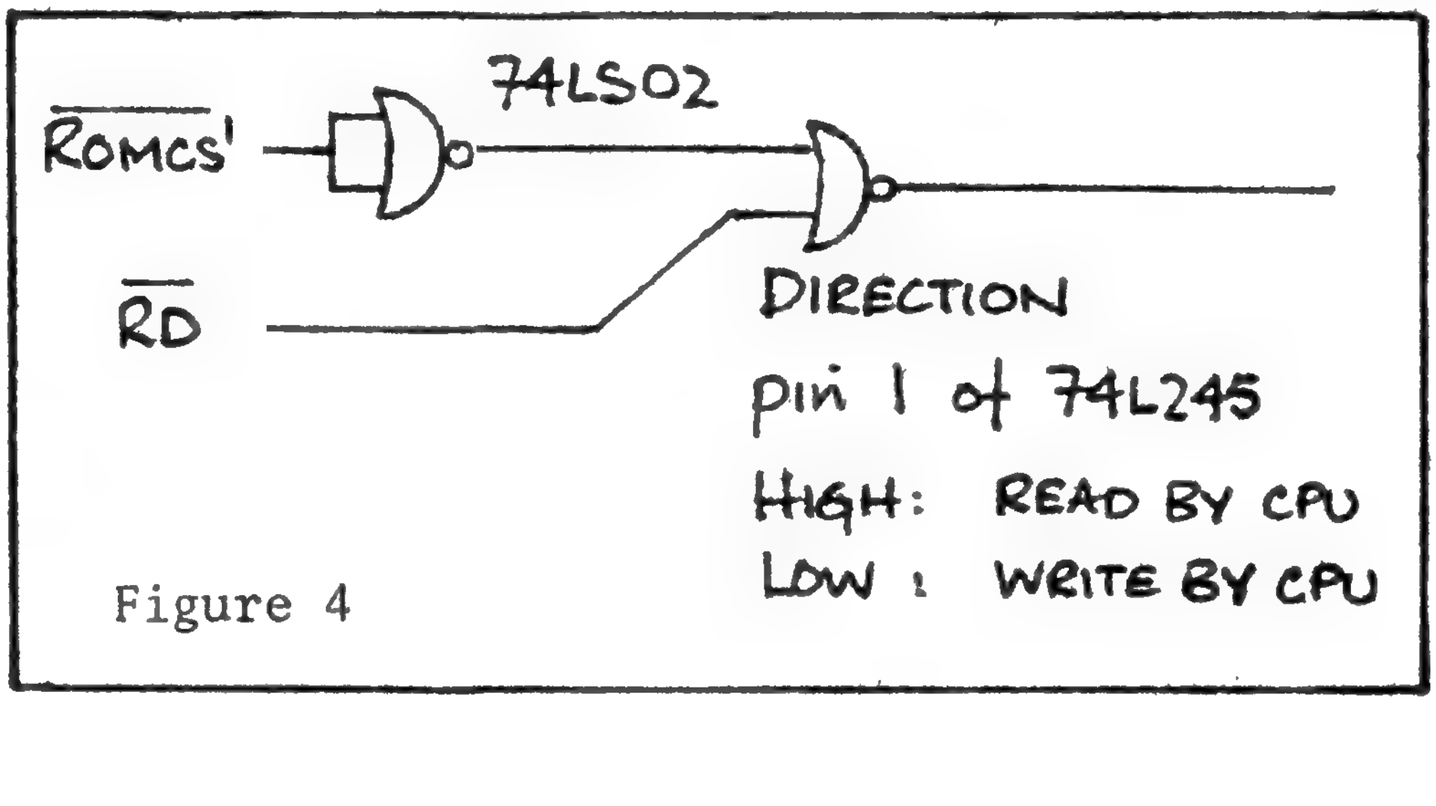


Figure 4

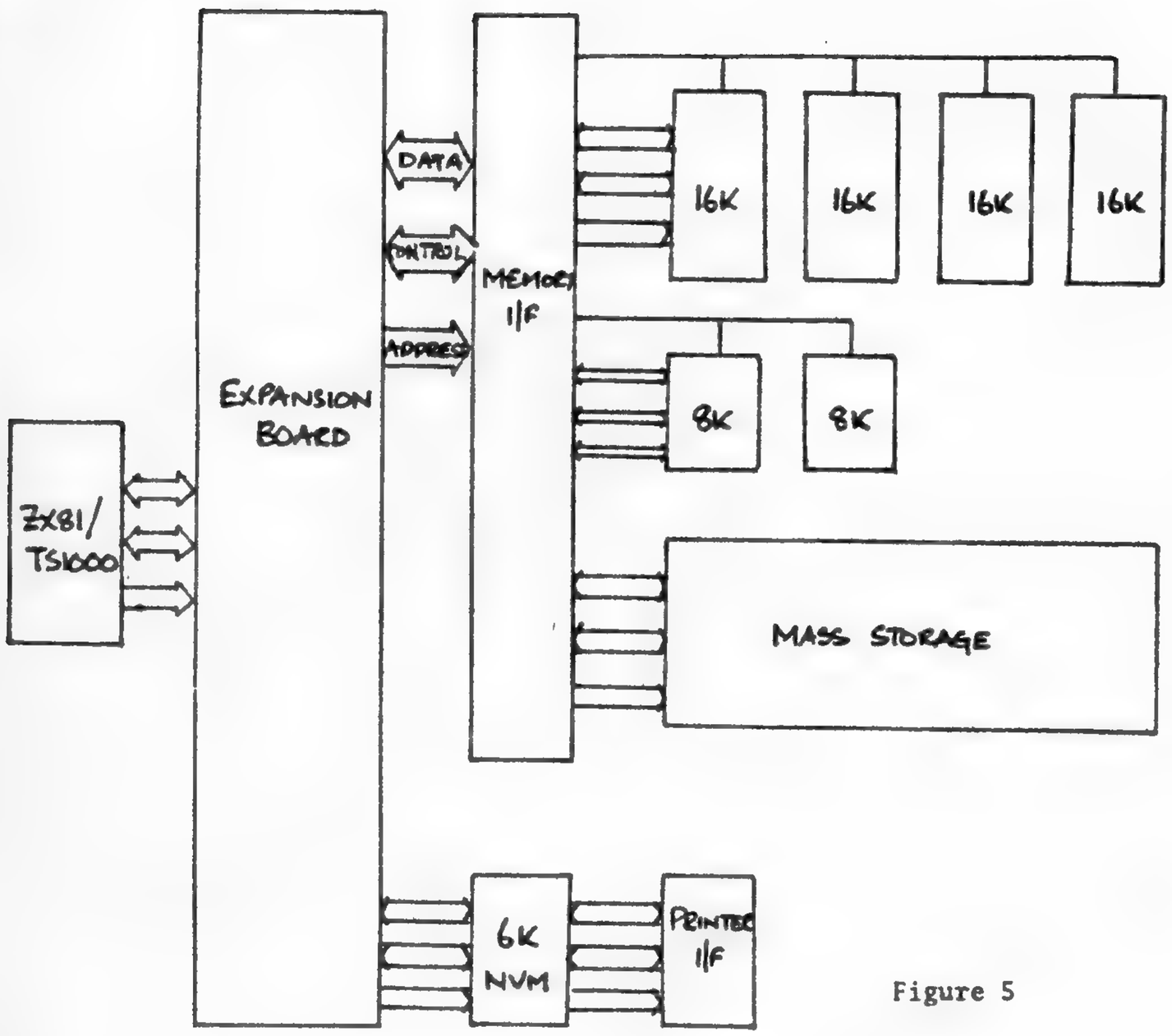


Figure 5

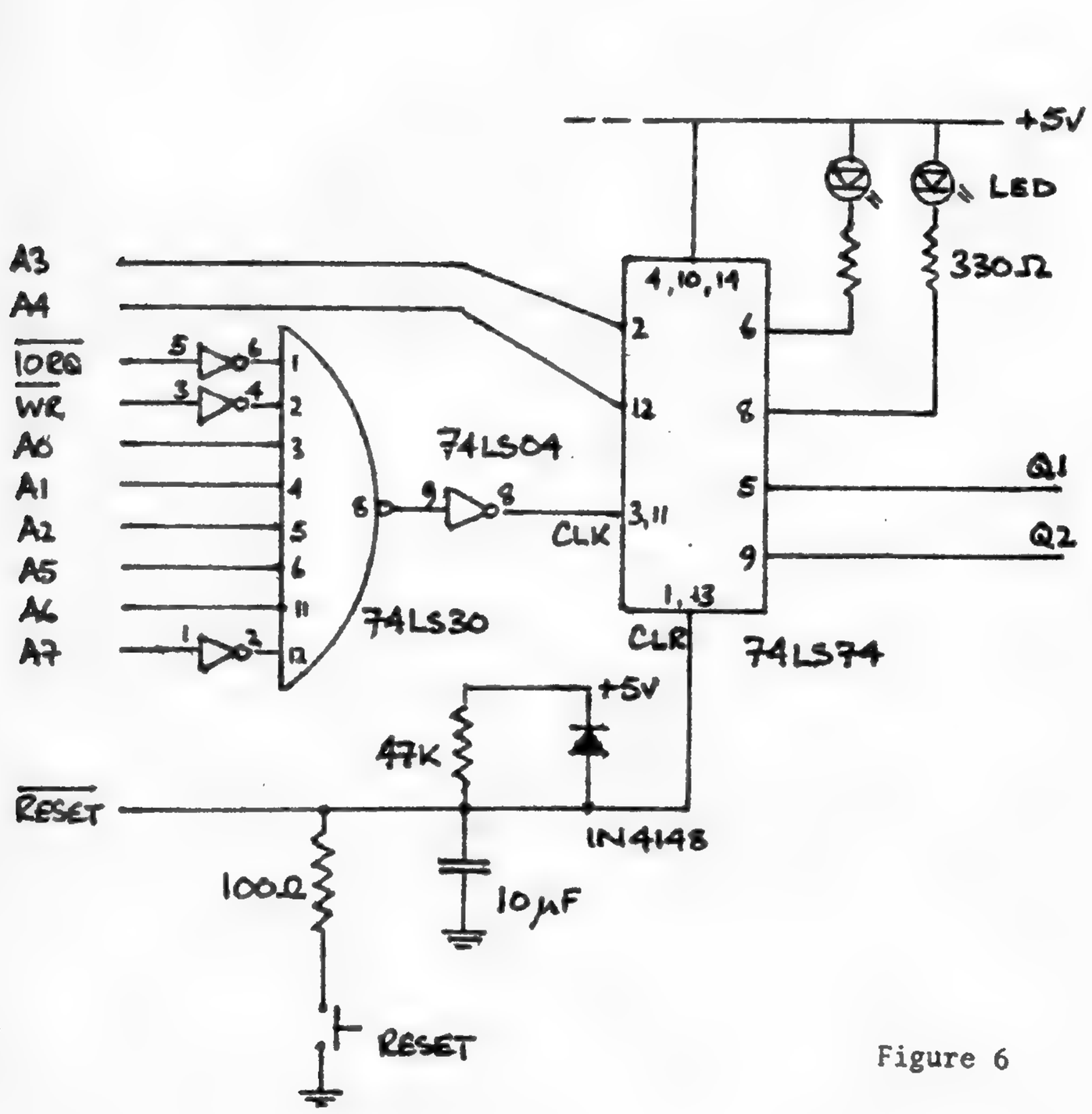


Figure 6

LET YOUR

TIMEX COMPUTER

WORK FOR YOU

PERSONAL - BUSINESS - EDUCATIONAL PROGRAMS:

On cassette - menu driven - printer optional

Available for: TS 1000/1500/2000 Series

MAILING LIST-16K: Holds 100 names, addresses and phone numbers - Searches -Sorts - Lists - Changes - Deletes - Prints ... 9.95

MAILING LIST-64K: Does same as 16K only holds 425 names, etc. 9.95

MAILING LIST-2068: For the TS 2068. Same as 16K, holds up to 300 names, etc. .. 9.95

INVENTORY-16K: Holds 150 items with comments (Serial Nos., etc.) Searches - Lists - Changes - Deletes - Prints 9.95

INVENTORY-64K: Same as 16K only holds 750 items with comments 9.95

INVENTORY-2068: For the TS 2068. Same as 16K only holds up to 600 items ... 9.95

CHECKING-16K: Lists 25 deposits - 80 checks - Adds interest - Deducts Serv. Charges - Searches by #, name, date or amount - Prints list of deposits, acct. & checks. 9.95

CHECKING-64K: Same as 16K only lists 100 deposts - 500 checks 9.95

CHECKING-2068: For the TS 2068. Same as 16K only lists up to 100 deposits and 350 checks 9.95

GRADEBOOK: Teacher's time saver - Self-adjusting memory - Computes means, standard deviations, variance and coefficient of variation - Ranks by weighted or unweighted average 9.95

FINANCIAL RECORD KEEPER-16K: Holds 20 files for household or small business expenses and/or income - Reviews, corrects or changes information - Prints list for tax purposes 14.95

FINANCIAL RECORD KEEPER PLUS-48K: Does same as 16K - also keeps up to 500 checking transactions - Reconciles checkbook with bank statement 19.95

FINANCIAL RECORD KEEPER PLUS-2068: For the TS 2068. Same as above with 350 checking transactions 19.95

SALES FILE-16K: Retail business program can be used directly as a cash register to keep records for bookkeeping and inventory. Holds 150 items & 25 accounts - Prints accounts, inventory & receipts 14.95

SALES FILE-64K: Same as 16K only holds 600 items & 100 accounts 14.95

SALES FILE-2068: For the TS 2068. Same as 64K 14.95

INVOICE CONTROL: Keeps track of, and prints, invoices for the small business. Self-adjusts according to amount of memory available 14.95

APPOINTMENT CALENDAR-16K: Enter date and list up to (8) appointments per day for up to (31) days - Change - Delete - Print - Save on tape 9.95

APPOINTMENT CALENDAR-2068: Same as above. 9.95

SEND FOR FREE CATALOG

Any three $9.95 tapes for $24.95 - Add $1.00 per tape shipping - Ind. res. add 5% sales tax - Send Cert. Check, M.O., VISA or M/Card No. w/Exp. Date.

HEATH COMPUTER SERVICES

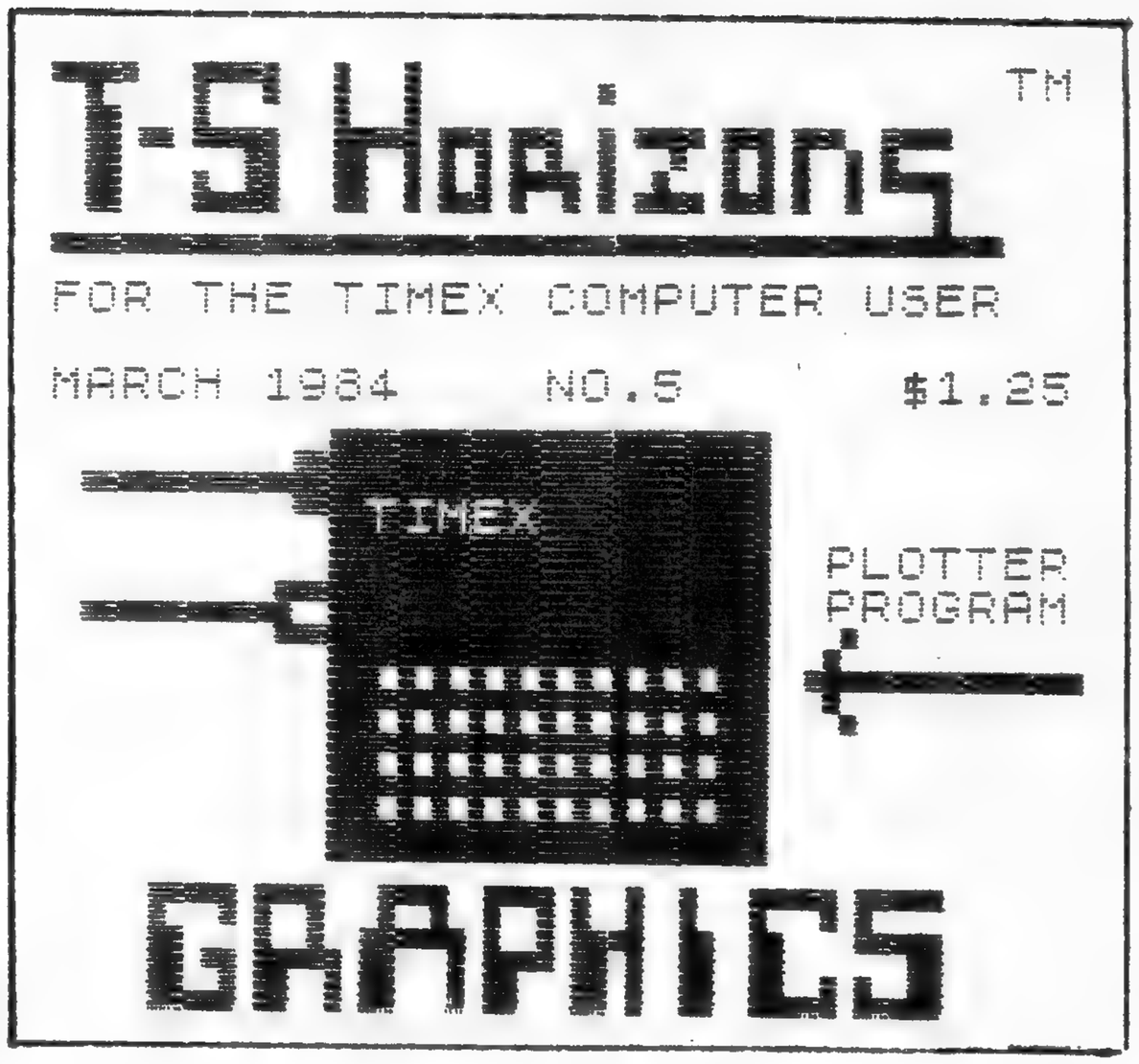
950 E. - 52 S., Greentown, IN 46936

Phone: (317) 628-3130

LISTing

A Text and Graphics Program
by Harry Johnson III and Gary Swartz

This program not only lets you create graphic drawings, using the directional arrow keys to plot out a picture, it also allows you to input text into the drawing. To insert text, position the cursor at the desired location using the arrow keys (5-8), press "P", type in the desired words or characters, and press ENTER. This causes the text to printed starting at the cursor location. You are then returned to the plotting. Instructions are included in the program.



For the TS 2068 **ZX81/TS1000/1500**

```
  1 GOSUB 200
  9 LET Y=21
 10 LET X=31
 20 LET X=X+(1 AND INKEY$="8")-
(1 AND INKEY$="5")
 24 LET Y=Y+(1 AND INKEY$="7")-
(1 AND INKEY$="6")
 25 IF Y>43 THEN LET Y=43
 26 IF Y<0 THEN LET Y=0
 28 IF X>63 THEN LET X=63
 29 IF X<0 THEN LET X=0
 41 IF INKEY$="M" THEN GOTO 100
 42 IF INKEY$="Z" THEN COPY
 43 IF INKEY$="I" THEN GOTO 500
 49 UNPLOT X,Y
 50 PLOT X,Y
 55 GOTO 16
100 PLOT X,Y
102 UNPLOT X,Y
120 LET X=X+(1 AND INKEY$="8")-
(1 AND INKEY$="5")
124 LET Y=Y+(1 AND INKEY$="7")-
(1 AND INKEY$="6")
128 IF Y>43 THEN LET Y=43
129 IF Y<0 THEN LET Y=0
130 IF X>63 THEN LET X=63
131 IF X<0 THEN LET X=0
132 IF INKEY$="D" THEN GOTO 20
133 IF INKEY$="I" THEN GOTO 500
134 GOTO 100
200 PRINT AT 1,10;"PLOTTER"
201 PRINT "BY HARRY J. JOHNSON
III"
202 PRINT "AND GARY L. SWARTZ
1984"
203 PRINT "HOLBROOK PENNSYLVAN
IA"
210 PRINT "KEY""M"" TO MOVE WIT
H OUT PLOTTING"
211 PRINT " OR TO ERASE,"
212 PRINT
220 PRINT "KEY ""D"" TO DRAW."
221 PRINT
230 PRINT "KEY ""Z"" TO COPY."
231 PRINT "(COPY MUST BE DONE I
N DRAW MODE)"
232 PRINT
240 PRINT "MOVE USING THE ARROW
KEYS."
241 PRINT
242 PRINT "KEY ""I"" TO ENTER T
EXT"
243 PRINT "POSITION CURSOR THEN
KEY ""P"""
244 PRINT "ENTER YOUR TEXT,IT W
ILL APPEAR"
245 PRINT "AT CURSOR POINT"
250 PRINT "          PRESS AN
Y KEY          "
251 PAUSE 4E4
252 CLS
255 RETURN
500 LET L=21
501 LET C=0
503 IF L<0 THEN LET L=0
504 IF L>21 THEN LET L=21
505 IF C<0 THEN LET C=0
506 IF C>31 THEN LET C=31
509 PRINT AT L,C;"■"
510 PRINT AT L,C;" "
520 LET L=L+(1 AND INKEY$="6")-
(1 AND INKEY$="7")
521 LET C=C+(1 AND INKEY$="8")-
(1 AND INKEY$="5")
522 IF INKEY$="P" THEN GOTO 540
525 GOTO 503
540 PRINT AT L,C;"■"
541 INPUT H$
542 PRINT AT L,C;H$
550 GOTO 20
560 SAVE "D"
561 RUN
```

REVIEWS

BOOK REVIEW
by Ed Simpson
(Publisher of Home Business News)

HOW TO MARKET YOUR TIMEX/SINCLAIR SOFTWARE
by R.A.Favro
Softmark Assoc.
210 Fifth Ave.
New York NY 10010
52 pages, 8x11
$12.95

This book provides a complete overview of how to market the Timex/Sinclair software that you have written. Many sources of further information are included in each section. This manual covers all the information that a potential software freelancer needs and is written in an easy to understand well organized style.

This book is divided into the following sections: Defining and developing your product, developing a market plan, software security, software publishers, mail order selling, magazine advertising, direct mail marketing, and other opportunities. These sections are 3 to 10 pages long and are sometimes further divided into smaller subsections. Of particular value are the chapters about developing a market plan, mail order selling, and direct mail marketing. The last chapter covers everything missed in the other sections and even includes tips on how to get free publicity.

This book covers everything you need from product pricing and packaging, to marketing methods. It is an excellent starting point for the freelancer and will greatly enhance your chance of successfully marketing your software. I like the books style and content but only wish the author would have lengthened some sections. Overall this book is an excellent value for the Timex/Sinclair freelance programmer (and can help any beginning software marketer).

ANALYSIS

16K RAM, 8K ROM TS-1000/ZX-81/TS-1500/ TS-2068. Stock selection guidance. Fundamental stock analysis. One-time input using data in newspapers or library. Make sound BUY/HOLD/SELL decisions. Uses Linear Regression techniques to forecast expected earnings and corresponding market price data.
Send $17.99 plus $1. postage and handling for each tape and tutorial ordered.

PORTFOLIO

16K RAM, 8K ROM TS-1000/ZX-81/TS-1500/ TS-2068. Investment portfolio file management. Maintain records of shares, cost, performance and selling-price-targets of up to 50 stocks, bonds, mutual funds. Menu driven. List file, records; record maintenance or file update options. Save data across program SAVES/LOADS. Input current market prices & program recalculates overall portfolio and individual security performance as well.
Send $15.99 plus $1. postage and handling for each tape and tutorial ordered.

ORION'S BELT ENTERPRISES
807 N. Fairway Rd., Glenside, PA 19038
(PA RESIDENTS add 6% sales tax)

Please specify computer model.

COMPUTER®
TRADER
MAGAZINE
★ ★ ★LIMITED TIME OFFER★ ★ ★
BAKER'S DOZEN SPECIAL!
$12.00 for 13 Issues
Regular Subscription $15.00 Year
Foreign Subscription: $55.00 (air mail)
$35.00 (surface)
Articles on MOST Home Computers, HAM Radio, hardware & software reviews, programs, computer languages and construction, plus much more!!!
Classified Ads for Computer & Ham Radio Equipment
FREE CLASSIFIED ADS
for subscribers
Excellent Display and Classified Ad Rates
Full National Coverage
CHET LAMBERT, W4WDR
1704 Sam Drive • Birmingham, AL 35235
(205) 854-0271
Sample Copy $2.50

SOFTWARE REVIEWS by

Tex Faucette

For the TS 2068

"SCREEN-CALC" Copyright 1982 by Banta Software, 8088 Highwood Way, Orangevale, CA 95662

SCREEN-CALC is a real cute electronic spreadsheet with a number of interesting features. The documentation contains 23 pages plus an index. About 8 pages consist of a "sample problem" which, when followed step by step by the first time user, will serve as a very good demonstration of the programs potential.

The program will hold up to 1008 "cells" with a minimum of ten elements in each direction. Three columns and six rows are displayed at a time, with the center (active) column and row displayed in a removable box. Display may be shifted one position in any direction with cursor keys, three positions with shifted cursors, or a "jump" can be called to any position by specific column and row number. The user can design a sheet of any size (within the 1008 cell limit). Banta recommends a preliminary design be laid out with pencil and paper, as the design is entered as (columns) x (rows), i.e., 10X20, and the 2068 does the rest. Data SAVED can be re-loaded on a new sheet of the same dimensions.

I have a strong suspicion that this program was originally written for the Spectrum. I base this on the fact that the instructions for inserting text mention that the Shift 8 must be used for inserting spaces, and that attempts to use the space key will result in a "break". This is not true for the 2068 in my experience. If it should happen, a GO TO 1200 is supposed to recover. The instructions also contain reference to " IF...THEN...ELSE command", which may confuse some 2068 users! Not to worry, specific instructions for this command follow, and an example is given later on in the manual.

In spite of these minor deficiencies, the documentation seems to be adequate. Once one has become familiar with the program and entered some data to work on, numerous manipulations of the data may be performed. While called function statements are limited to 80 characters (keystrokes), an intermediate result may be stored in an unused cell to be operated on by a second function statement to complete the more complex operations. These called function statements may use the majority of 1-stroke functions such as EXP, RND, TAN, SIN, COS, SQR, ABS, etc.

SCREEN-CALC has sufficient menus and sub menus to rate as "User Friendly", at least for one experienced in the use of spreadsheets. The novice in this area would benefit from a more extensive tutorial than that supplied in the documentation. I did manage to achieve a few accidental "breaks" while using the program, but was able to recover and return to the program without losing data. Printout is done with use of the COPY statement, and those with wide printers and programming ability might want to query Banta concerning possible modifications to take advantage of their individual hardware capabilities.

"SCREEN FILE" Copyright by Banta Software, 8088 Highwood Way, Orangevale, CA 95662

SCREEN FILE is designed to run on any Sinclair ZX-81 or Timex Sinclair with 16K RAM. The cassette comes with 5 pages of documentation which includes a 1-1/2 page "sample operation". Program is recorded once on both sides of the cassette.

SCREEN FILE features simple menu options and screen prompts and could be used for a variety of applications ranging from a simple name, address, phone number file to a file containing up to 6 additional lines of data following the pre-dimensioned name, address, etc. blocks. Files may be searched by name, number, or element of a "key search line", and may be modified, saved and printed. Re-loading time for a file containing data is dependent on the amount of data stored, which may be in excess of 17,000 characters.

While SCREEN FILE showed an excellent response to keyboard input, there are a few features I was not happy with. When a file was printed (evidently with the COPY command) the menu selections are printed as the first line. This could be trimmed off with knife or scissors, but who wants to bother?. I also managed to achieve a "keyboard lock" while attempting to "MODIFY" a file and was unable to recover from that condition without total loss of data.

Conclusion: SCREEN FILE needs a bit of modification.

ZX81/TS1000/1500

"GRIDLOCK" Copyright 1983 by 2-BIT SOFTWARE, P.O. Box 2036, Del Mar, CA 92014

The "GRIDLOCK" casette contains 4 simple games for the unexpanded (2K) Timex/Sinclair computers.

Program 1, "Tow Truck", uses machine code to produce a very cute, fast moving "tow truck" that chugs rapidly to the coordinates specified by the player. If the correct screen coordinates have been given, it will return with the "stranded vehicle" in tow, otherwise it will return empty. Score is kept of vehicles "found" and "lost"

"Foggy Sea" lets you "rescue" a missing ship by entering coordinates on a 15 x 20 grid. "Robot" lets you re-pack cartons, again by entry of coordinates in a "from" "to" sequence. "Easy Plot" is a simple program to display the plot of equations for Y as a function of X.

The carton which contains the cassette indicates the program is for ages 10 UP. I believe that 2-BIT SOFTWARE is guilty of gross underestimation of the sophistication of todays kids, and would not hesitate to turn these programs over to kids from grades "K" on up, with a bare minimum of instructions!

BOOK REVIEW by Tex Faucette

"TIMEX/SINCLAIR 1000 BASIC PROGRAMS IN MINUTES" by Stanley R. Trost, Copyright 1983 SYBEX Inc.,2344 Sixth Street, Berkeley, CA 94710.

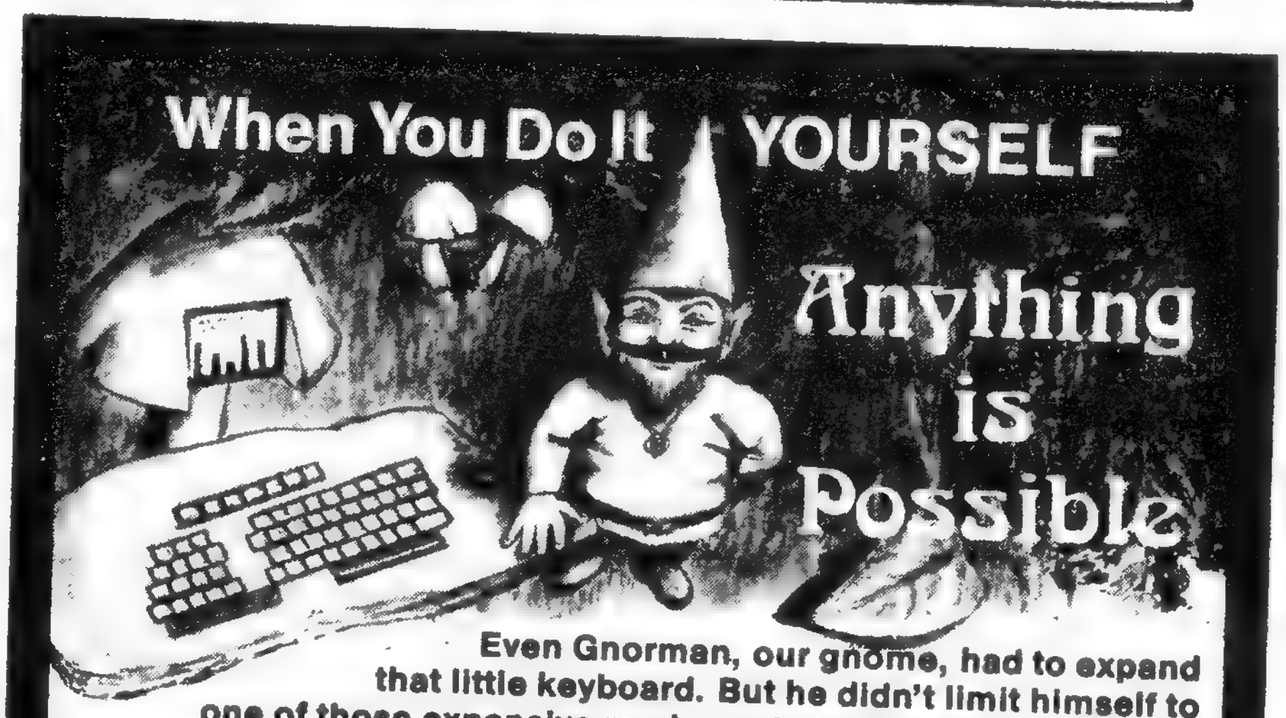
The author, Stanley R. Trost, has provided a rather unique approach in his book of programs. He provides a series of short, simple programs in the most basic of BASIC, and an appendix of central subroutines which may be combined to perform useful functions with the expanded (16K) T/S 1000. No programming knowledge is required.

Chapter 1 provides simple instructions for creating (and saveing) a subroutine library (listed in Appendix A) for subsequent use with the remainder of the book. Chapter 2 contains home and business finance routines. Chapter 3 is business programs which include three types of depreciation, salesmans comission, wages with overtime, etc. Chapter 4 is dedicated to real estate, featuring calculations of monthly Payments, effect of accelerated Payments, balloon Payments, rental Property analysis, etc. Chapter 5 contains simple data analysis with graphic Plotting. Chapter 6 is devoted to mathematics Practice.

How the routines in each chapter may be used with the subroutine "library" given in Appendix A is illustrated in Appendix B.

I would recommend this book for the beginning computerist. Although the routines are admittedly somewhat slow, the beginner is certain to grasp the idea of modular programming, and I agree with the author that one will learn some BASIC, " . . . in a Painless, almost automatic way."

SURGE SUPPRESSION DIODES: Eliminate power surges and spikes in the D.C. section of your power supply. D.C. operation allows these diodes to operate 35,000 times faster than conventional M.O.-V. surge suppressors. Fits inside ZX/TS computors. $2.00 PPD., with instructions. To order, Send check or money order, along with your computor model number to, Matthew Zenkar, 142 Holcroft Rd., Rochester, NY 14612 NYS Only Add 13¢ sales tax. Inquiries send SASE. Dealers/OEM inquiries invited.



Even Gnorman, our gnome, had to expand that little keyboard. But he didn't limit himself to one of those expensive ready-made jobs. Gnor should you!

Why not use a full-size surplus keyboard (about $20, anywhere) to create your own *customized* console, our kit explains how:

- Do's and Don't's for selecting the right keyboard.
- Simple, illustrated instructions on how to hook it up to your TS1000/ ZX81 computer.
- Additional instructions for adding Single-Key Shifted Functions (like single-key "DELETE").
- For the "pro" - A Schematic of the computer.
- **AND THE CROWNING TOUCH. MULE's unique 3-color plastic symbol overlays, sized to fit your new keyboard.**

"I have mounted your symbol set on my new keyboard and I can't compliment you enough. **I.N. - Randolph, MA**

"Very pleased with your product. The writing is simply superb. What you have is much better than any articles published on the subject." **W.M. - Camden, SC**

"... looks great, you've got a fantastic product there." **R.J. - Cypress, CA**

MULE Electronics - Dept. 310P
444 Lincoln Blvd.
Venice, CA 90291

$11.95 ppd*

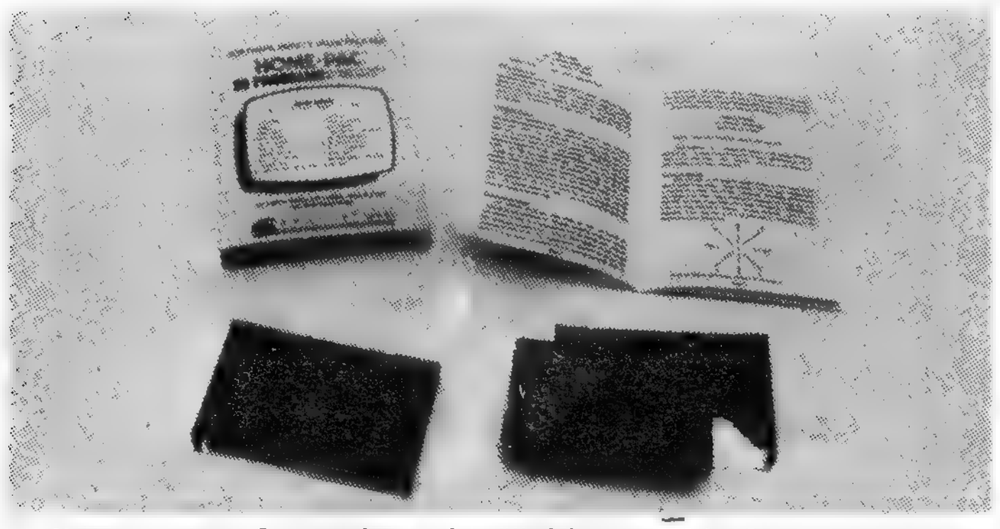
*U.S. and Canada - Others please add U.S. $2. California residents add 6.5% tax. **MONEY-BACK GUARANTEE.**

For 16K TS1000, 1500 & ZX81

NEW TS2068 VERSION

20 PROGRAMS
ON 2 CASSETTE TAPES

for the amazingly low price of
not $39.95...not $29.95...ONLY $19.95
(TS2068 version only $29.95)



Save money, learn about the exciting world of home computing and have fun doing it with the new HOME-PAC™ from SIMPLEX SOFTWARE.

COMPUTER LITERACY

Designed with the beginning computer user in mind, the HOME-PAC covers more application areas than any other software package available. Discover and explore educational, recreational, home-finance, graphics & utility applications. The HOME-PAC includes such exciting programs as star invader, biorhythms, checkbook balancer, statistics, Comp-u-sketch, animals, micro-organ (music), machine language monitor and many (12) others. Also included is a well written easy-to-follow user manual that takes you step-by-step through each of the 20 challenging programs.

HIGH QUALITY

The programs are well written and user friendly. The 2 cassette tapes are high in quality and unconditionally guaranteed for 1 year to load & run. The 21 page user manual is in a class by itself, and the packaging includes free Norelco type hard storage cases.

MONEY BACK GUARANTEE

We are so confident that the HOME-PAC represents the most outstanding value in home computer software available, that we are offering an unheard of 10 day no-risk money back guarantee.

10 DAY NO-RISK GUARANTEE
If not completely satisfied, return in original condition for a prompt refund.

Order today, offer good for limited time only!

SIMPLEX SOFTWARE

Dept. B2, 220 N. Centre St., Merchantville, N.J. 08109

Please rush my order for the HOME-PAC, with 10 day no risk guarantee, at $19.95 ($29.95 for TS2068 version) each plus $2.00 postage & handling. Outside USA Add $2.00 per order.

☐ Payment Enclosed $_____ Residents of N.J. Add 6% Sales Tax.

Charge My ☐ Mastercard ☐ Visa

Card No. _____ Exp. Date _____

Signature _____

Name _____

Address _____

City _____ State _____ Zip _____

☐ Send me a FREE brochure.

DEALER INQUIRIES INVITED

HARDWARE REVIEW
by P. Donnelly

ITEM: DK TRONICS KEYBOARD
FROM: DK TRONICS, SUFFERN, WALDEN, ENGLAND
(799-26350)
PRICE: $72.00 + S&H (Depends on exchange rate)

About a month after my second order (the first bounced because of some problems with VISA), I received my DK'Tronics "big" Keyboard for my TS/1000.

The keyboard case is made of a soft black plastic and has 40 grey keys and an additional 12 red keypad keys. The feel of the keys is good and clear vinyl markers on each key contain the standard Sinclair codes, as used in the U.K. (e.g., NEWLINE for ENTER). Inside the case is DK's "motherboard" which is simply an extension of the ZX81 buss to the rear of the case, but which has an extra male connector sticking up. This leaves the newly exposed rear connector available for other devices. DK also provides enough room for a small internal power supply for graphics ROM assembly. The standard phone plug connectors are exposed through a slot in the back of the case.

Assembling the DK'Tronics keyboard was easy for the most part. Standard installation requires only that the DK keyboard and ZX81 have the screws holding them together removed and the ZX81 P.C. board placed inside the keyboard case. The ZX board plugs in to the motherboard via the edge connector. Two specially prepared connectors then simply plug into the keyboard slots. There is one problem with the standard instalation however. The DK product is intended for use with a UHF modulator. These come out of the case about 1 1/2" further from the back than the USA's VHF output and and extra 1/2" hole has to be drilled in the case. This is not a problem, as the material is very soft and easier to work than wood.

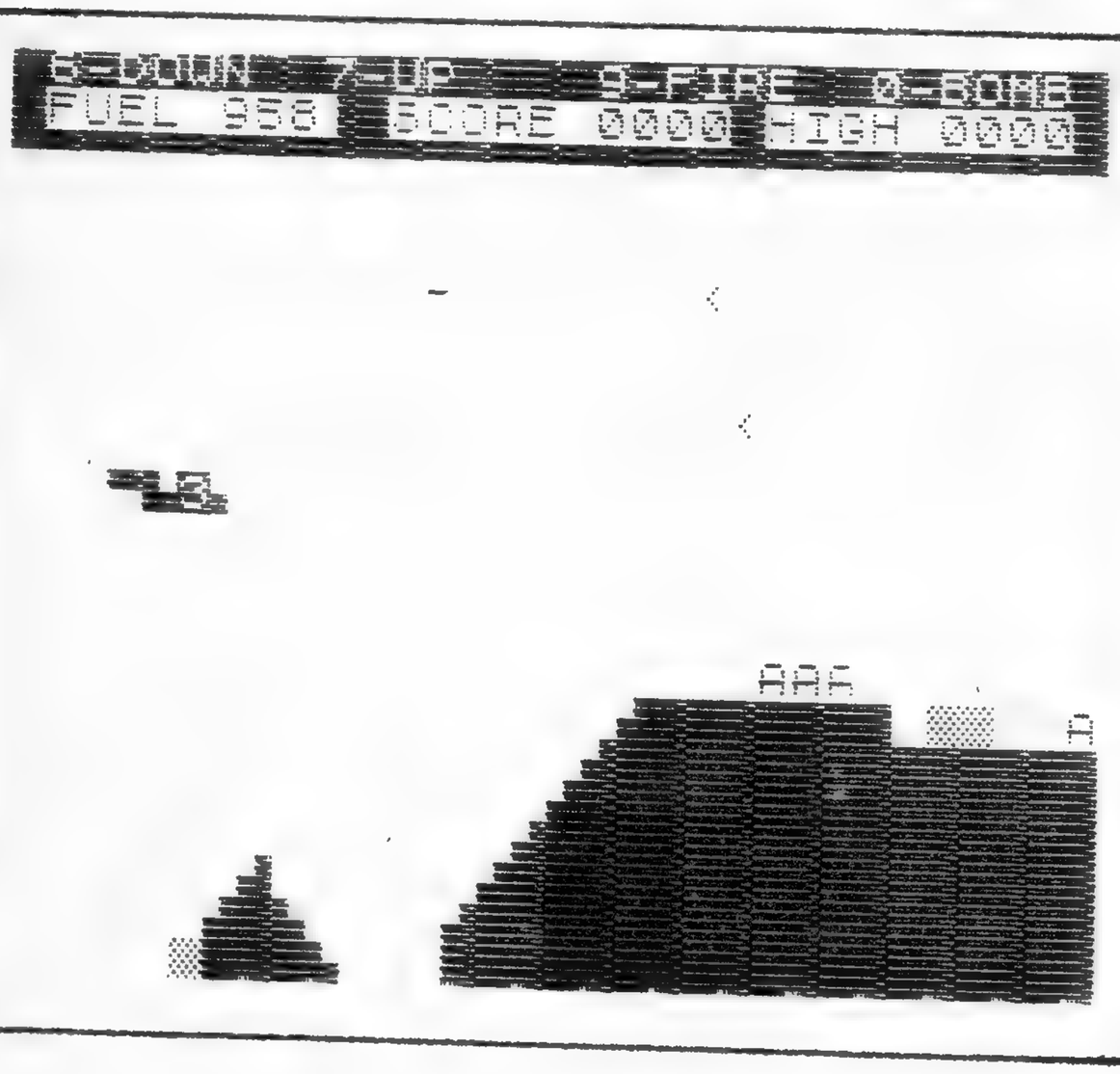
The workmanship on the board I received was not very good. I had to realign the motherboard and found some of the wooden mounting flocks somewhat off center, as well. Also, DK made no provision for the Ch2 -Ch3 switch in the bottom of the case. Finally, an obvious mold flaw mars the finish on top of my unit.

Other shortcomings include the lack of a space bar, the use of a wooden bottom plate and the total lack of sheilding (not required in the UK, I'd guess). These shortcomings are offset somewhat by the fine "feel" of the keyboard, the ease with which the plastic material can be worked, the reasonable price and the extra numeric keyboard. On balance, I would rate the DK's keyboard a reasonable value for the money, but recommend you be prepared to use simple hand tools (screwdriver, hand brace, pliers) to "finish" your keyboard. I expect a warranty claim would be tough to follow up. Do ask for the Overseas price, not the U.K. domestic price.

SOFTWARE REVIEW: REDALERT **William Pierson**

MANUFACTURER: SOFTSYNC, Inc.

REDALERT is one of the best arcade type games available for the Timex-Sinclair 1000. This game is written in machine code providing some very fast action graphics. The cassette comes in an attractively packaged box with excellent instructions, including some tips if loading problems are encountered. The game requires the 16K Rampack. Once loaded the game is self-starting. I recommend that you read the instructions prior to playing the game for the first time. The numeric



25% OFF

BOOKS THAT MAKE YOUR COMPUTER AS SIMPLE AS IT WAS MEANT TO BE

PROGRAMMING YOUR TIMEX / SINCLAIR 1000 IN BASIC by Mario Eisenbacher. An easy-to-digest format leads you through hands-on examples of programs in early chapters, then helps you develop skills you need to grasp and execute more complex programs. At each new level of understanding you get a vocabulary with definitions; a short, fancy program to run; practice programs; exercise problems with answers; examples of errors along with explanations of how to prevent and solve them; and a summary of what you've learned.

30 GAMES FOR THE TIMEX / SINCLAIR COMPUTER by Bill L. Behrendt. Develop computing and problem-solving skills with challenges in deep space; games that forecast the future; magic mazes and treacherous trials; ancient and modern war games; cliff diving; a real predator / prey simulation; a chance to be an artist; and more. These exciting, all-new games with graphics come complete with instructions for running and playing.

TIMEX / SINCLAIR INTERFACING: TESTED PROJECTS FOR THE XZ80, ZX81, AND THE TIMEX / SINCLAIR 1000 by James M. Downey and Don Rindsberg. Now you can understand, design, and go on to actually build useful input / output devices for your computer. This book presents a series of step-by-step instructions for such projects as a relay controller, digital-to-analog converter, joystick interface, printer interface, analog-to-digital converter, and dumb terminal configuration. Supplies you with construction techniques, programming considerations, troubleshooting plans, BASIC listings for all programs needed, printouts for the programs used, and chip data.

Prentice-Hall

RETURN TO: Prentice-Hall / P.O. Box 512, W. Nyack, NY 10944
Please send ____ copy(s) of **Programming Your Timex / Sinclair 1000 in BASIC** (729871-4) @ $13.45 hardcover (reg. $17.95). ____ copy(s) of **30 Games for the Timex / Sinclair Computer** (918904-1) @ $7.45 hardcover (reg. $9.95). ____ copy(s) of **Timex / Sinclair Interfacing** (921759-2) @ $13.45 hardcover (reg. $17.95). Payment enclosed (publisher pays postage, money-back guarantee) Bill ☐ me. Bill my ☐ Visa or ☐ Mastercard (New Jersey residents please add applicable sales tax)

_____ Exp. _____

Signature _____

Name (print) _____

Address _____

City _____

State _____ Zip _____

Dept. 3 **GP20005-A1(2)**

keys 6, 7, 9 and 0 provide the movement controls for the ship as well as the fire controls for missiles and bombs.

The game starts with the ship appearing on the left hand side of the screen, the ground scrolling form right to left to give the illusion of movement. As you "fly" along fuel dumps (graphic H), enemy missiles (letter A), and enemy fighters ( ) appear as targets for your missiles and bombs. You can burst fire five missiles or drop three bombs at a time. Enemy fighters can also fire back at your ship. So be careful.

You are allocated three ships and 1000 units of fuel. The game continues until all three of your ships are destroyed or you run out of fuel. There is no provision for getting extra ships or fuel. Once a ship is destroyed, there is a brief pause, then the game continues.

Initial impressions of REDALERT are very good. There is none of the blinking effect noted in some of the previous ZX/Timex games. The small TS keyboard does require some getting used to, but after several games you can easily manuever your ship and zap the enemy targets. The game loaded the first time without difficulty. There is a provision to save the game with variables to keep track of the highest score.

Included in the instructions are some addresses to change game values; for example, the number of ships, fuel dumps or enemy fighters. This information is useful for increasing the difficulty of the game.

This has to be one of the best TS games I have seen on the market. The fast action graphics make the game interesting and exciting even after several hundred games. REDALERT is well worth the price of $15.95. I can highly recommend it to those who want a challenging game.

PHEONIX ENTERPRISES
1780 N. DuPont Hwy.
No.17,Dover, DE 19901
1-(302)-734-0179

TIMEX has left, but we HAVEN'T! Just look at the software we've gathered up for you TS 2068 owners! This QUICKSILVA software has been marketed in Europe for over a year and is now considered to be among the finest available! Now we've got them all for your TS 2068 on cassette. Every order for QS TS 2068 software will receive a 1984 QS Calendar absolutely free!

Mined Out....................................$19.95
Cybird Assault (formerly Astroblaster).......$19.95
Timegate (No. 1 in Europe,don't miss it!)....$24.95
The Chessplayer (Very best talking chess!)...$24.95
Xadom (3D Graphics Arcade/Adventure!)........$24.95
Smuggler's Cove (Hi-Res Graphic/Text Adventure-Educational/Historic)..................$24.95
3D Strategy (3D Tic-Tac-Toe!)................$24.95
Bugaboo (England loved it,you will too!).....$24.95

And TIMEX 1000/1500 owners, we haven't forgotten about you either!

Just look at what goodies we've dug up for you! QUICKSILVA also makes programs for your computers! And we've got them.

3D Black Star............$9.95
Croaka Crawla............$9.95
Damper & Glooper..............$9.95
Munchees......................$9.95
Pioneer Trail..................$9.95

SOFTSYNC also markets software for the TS 2068 and we've got that now too! These people are no strangers to you and neither is their work, so without furthur ado, here they are.

Personal Accountant........$24.95
Gulp Man...................$19.95
Voice Chess...................$24.95
Zeus Assembler................$19.95
Cyberzone....................$19.95

And look at this TS 1000/1500 software! We challenge anybody to beat these prices! This software is brand-new and up to 50% off list!! ALL of these are in limited supply so ACT NOW!!!

Name	Reg.List	Sale
Mazogs	$19.95	$9.99
Programmer's Toolkit	$14.95	$9.99
SuperChess	$16.95	$9.99
Alien Invaision(Spc. Invdrs)	$14.95	$9.99
Meteorites (Asteroids)	$14.95	$9.99
Red Alert (Defender)	$14.95	$9.99
Alpha/Vowel Tutor	$14.95	$9.99
Space Commando	$14.95	$9.99
Shark's Treasure	$14.95	$9.99
Night Gunner	$14.95	$9.99
Math Raiders 1000	$14.95	$9.99
	171.45	109.89

!!!!!!!!!!!!!!!!!!!!!!!!A TS 2068 Wordprocessor is here!!!!!!!!!!!!!!!!!!!!!!!!!!

TASWORD 2:A true word processor with 64 columns on the screen and the printer.This program works with either a TV or a monitor. A steal at the low price of only...$29.95
TASWIDE:Gives you 64 columns on your screen for your programs. Also gives your 2040 64 column printout on a single sheet!!....................$19.95

Please add 5% for shipping. This must be at least $2.50! Add 10% for Foreign!

TS HEW

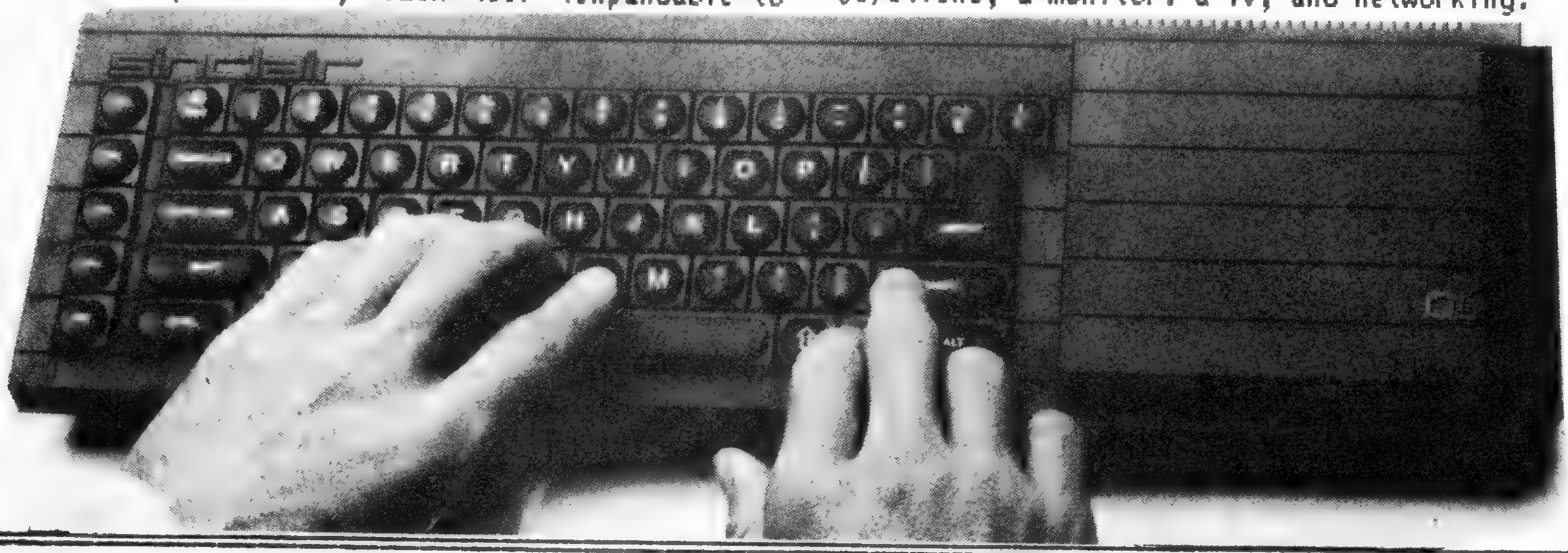
There are two new advanced computers on the market that may be of interest to Timex and Sinclair users.

The Sinclair QL (Quantum Leap)

As reported last issue the QL is a new business and personal computer from Clive Sinclair and Sinclair Research, Ltd. The QL is already available in England, and Sinclair had hoped to be selling the computer to mail order customers in the U.S. by the third quarter of this year. However a recent hold-up in component delivery will probably delay U.S. availability until the fourth quarter. The announced price is $499.

The QL is said to be comparable to the Apple Mcintosh in every way except price - the Mac sells for about five times as much. The QL features a 65-key keyboard, two built-in microtape drives, 128K RAM (expandable to 640K). The main microprocessoris a 32-bit 68008 chip containing SuperBASIC and QDOS. SuperBASIC is an enhanced BASIC featuring user-friendly commands and flexibility. (For the QL, Sinclair has abandonned its one-touch keyword system). The operating system, QDOS,is multi-tasking and can maintain up to 20 program "windows" simultaneousy. QDOS also can support a 256-user local area network. The display is 85 columns by 25 rows (516x256 pixels, hi-res)or 40 columns by 25(lo-res).

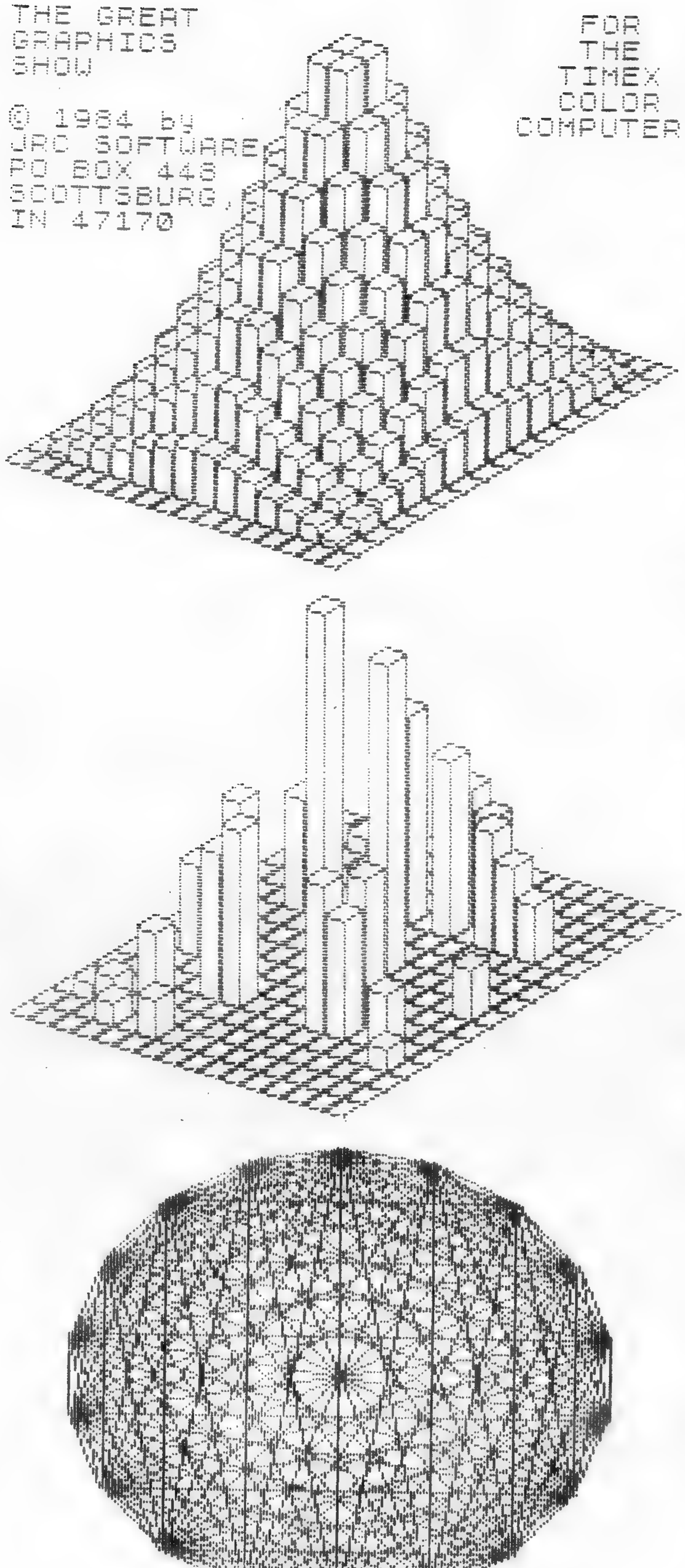
Four sophisticated programs are provided with the QL: Quill - a word processor; Abucus - a spread sheet; Archive - a data base; and Easel - a graphics package. (All programs can share data with each other.) Ports are provided for a modem, a printer, joysticks, a monitor. a TV, and networking.



The Memotech MTX-512

For the last year and a half Memotech Corporation has developed and sold RAM paks, EPROMS, printer interfaces, and keyboards for Timex Sinclair Computers. With the announcement last year that Memotech was developing its oun microcomputer, many Timex users were naturally interested. The Memotech MTX-512 computer is now available. The advertisement appearing in several computer publications is very impressive. 64K RAM built-in, expandable to 512K (thus MTX 512), plus seperate 16K RAM for video output with a seperate processor.

DISPLAY: 256 X 192 resolution , 16 colors which can all be used simultaneously, 32 sprites, and eight user-definable windows.
INPUT/OUTPUT: Centronics parallel printer port, two standard joystick ports, cassette port (2400 baud) separate TV and monitor ports, 4-channel hifi port, ROM cartridge port, plus a uncommitted parallel I/O port (all standard).
LANGUAGE: MTX BASIC with abbreviated commands, MTX GRAPHICS, NODDY - an II - command language for children, and MTX ASSEMBLER (built into 24K ROM). PASCAL and FORTH availabe as add on ROMs.
KEYBOARD: 81 keys with numeric keypads, 8 function keys, auto repeat.



ITEM: Software from JRC, PO Box 448, Scottsburg, IN 47170.

For the TS 2068

-The Great Graphics Show: The examples above are just two of the many graphics display that can be done with the "Great Graphics Show."

-Three Games Package: Paint and draw with Colorsketch, using your joystick more than 12 single keystroke commands. "Timing the Trash Compactor" is a cleverly animated game for children and adults. "Dodge-em" is a clasic race game with a surprising twist, fast and tough.

-HiRes Lander: The clasic space game with high-resolution realism and two difficulty levels. Requires skill and patience.

-Oscilloscope: Real time three-dimensional rotaion with dozens of possible patterns.

-Touch Type Learning Game: Introduces 197 symbols and tracks your progress. Educaional but fun game.

-Easy Editor: Fastest and easiest text editor ever in BASIC.

All six of these programs are available for $24.95 on a high - quality TDK tape. Also available seperately for $9.95 each.

For the TS 1000/1500

-Super Tape: Include Super Function Plot, 4-2K action games, Touch Type Teacher, Extensions to BASIC, Upper/Lower case on printer, Hi-Res on printer, and many more programs, mostly in machine code, on TDK tape for $24.95.

CURRY COMPUTER
Software & Hardware
T/S 1000 and T/S 1500
T/S 2000 Series
Write for FREE Catalog
Over 60 Programs/Keyboards/Rampacks
DEALER INQUIRIES WELCOME
5344 W. Banff Ln./Glendale, AZ 85306
1-602-978-2902

KELTINORS KEEP (16K)

A realistic adventure involving fighting,bribing,strategy and luck. Many rooms,levels,weapons,treasures and magic items.Dungeon and objects set up RANDOMLY.Packed with suprises. On cassette-$6.95.Free catalog with order.Send cheque or money order to: MILL RESEARCH 32749 Avalon Cres. Abbotsford, B.C.,Canada V2T 3W9

JRC Software
Software for Sinclair and
Timex Sinclair Computers
Call (812) 752-6071 or 752-5106
John Richard Coffey
P.O. Box 448
Scottsburg, IN 47170

ITEM: 5 programs for the TS 2060 from Softsync, 14E. 4th Street, NY, NY 10016.
-Gulpman: PacMan-Type game except Gulpman can shoot at his attacker. Joystick or keyboard control. 15 mazes and 9 speeds. (Ed. note: I liked it).
-Cyberzone: Space game. Voice-activated firing (no joke!), joystick/keyboard control. Nice color and very fast. (Ed. note: I'm hooked).
-Voice Chess: Several difficulty levels. Computer talked to the player with mildly sarcastic vocabulary. Nice game.
-Personal Accountant: General ledger, amortization program,address file with 15-page booklet.
-Zeus Assembler: Machine Code programing.

All programs on cassette ($19.95, except Accountant, $24.95). These programs will be reviewed in upcoming issues.

ITEM: Apropos Technology announces three new program packages for the TS-1000 and TS-1500

DR. FLOYD: A psychoanalytic artificial intelligence program which allows the player to carry on a "conversation" with the computer. Great for showing others what a small computer can do.

GRAPHICS PAK 1: A collection of five programs which allow the user to draw pictures on his TV screen through keyborad control. All creations can be saved to tape and recalled. One program allows placement of any character anywhere on the screen.

WORDPLAY: A collection of five English language programs which teach the player important points of grammer and literature in a fun and stimulating manner.

All require 16K of memory and sell for $12.95 plus $2.00 S & H.

Mutual Funds Investors
Timex 1000 Users

Two 16K programs to cover the mutual funds.

1. Mutual Fund Minder
- Keeps track of stocks you own showing current value of investment, per cent gain or loss, and other data.
- Compares your account to others you select.
- Prints summary, details, and a graph, for quick analysis.

2. Mutual Fund Master
- Store entire mutual funds listing, up to 600 stocks.
- Select printout; choose minimum per cent gain for printing.
- Automatically prints when screen is full, if desired.
- Ideal for selecting funds for more frequent looks with Mutual Fund Minder.

The two programs compliment each other, and most complete analysis is accomplished by using both.

Programs are menu driven, and user friendly, with built in extras to facilitate use. Instructions with cassette.

PRICE: $19.95 each, or both for $34.95 + $2 shipping. California residents add 6½% Sales Tax.

Compare this low price to what you would pay to subcribe to an analysis service.

For Free Literature

STOCK MARKET SOFTWARE
1556 Halford Ave. #236
Santa Clara, Ca. 95051

Partial Pascal

Pascal is a computer programming language, very popular on microcomputers, invented by Professor Niklaus Wirth of the Swiss Institute of Technology. Partial Pascal is a subset of Pascal for the ZX81, Timex Sinclair 1000 and 1500.

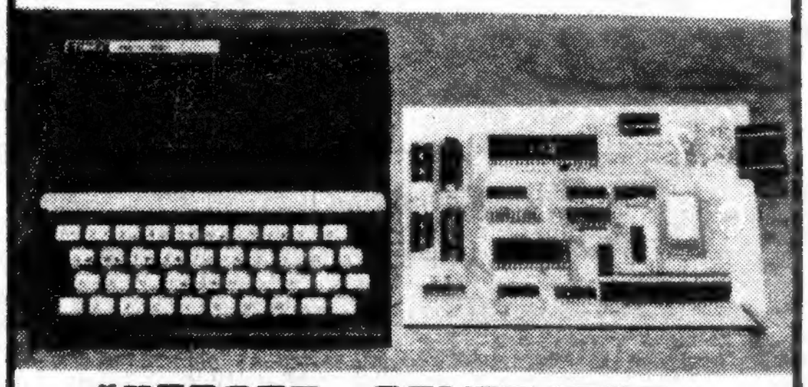
Partial Pascal includes **IF, THEN, ELSE, CASE, OF, OTHERWISE, WHILE, DO, REPEAT, UNTIL, FOR, TO, DOWNTO, BEGIN** and **END** for program control; *read readln, write, writeln, reset, rewrite, eoln, eof, inkey* and *text* for input and output; +, -, *, **DIV, MOD,** *abs, chr, odd, ord, pred, succ* and *sqr* for calculations; **NOT, AND** and **OR** for decisions; **PROCEDURE, FUNCTION** and **FORWARD** for subroutines; **CONST, TYPE, VAR, ARRAY,** *Boolean, char* and *integer* for data; *copy, fast, slow, pause* and *halt* for computer control; *plot* and *point* for graphics; and *mem, mem2, memw, move* and *usr* for machine language.

Partial Pascal executes much faster than BASIC because, as a compiled language, it doesn't have to search thru tables to find variables or search thru line numbers as BASIC does for each **goto, gosub** or **next.** Partial Pascal's 16-bit integer calculations are much faster than BASIC's arithmetic.

Please note our new address. Partial Pascal is supplied on cassette tape with instruction manual. 16K RAM required. $30 postpaid from

Semper Software
585 Glen Ellyn Place
Glen Ellyn, Illinois 60137

DATA ACQUISITION & CONTROL SYSTEM FOR THE ZX81/TS1000/TS1500



"REPORT GENERATOR"

* CENTRONICS PARALLEL PRINTER INTERFACE
  Supports LPRINT, LLIST, & COPY Keys
* REAL TIME CLOCK CALENDAR CHIP
  Battery Backup DY/MO/YR HR/MN/SC
* ANALOG TO DIGITAL CONVERTER
  8 Channel 8 Bit 0-5 Volt Inputs
  100 Microsecond Conversion Time
* DIGITAL INPUTS - 8 TTL Compatible
  Monitor Switches, Contacts, etc.
* DIGITAL OUTPUTS - 8 TTL Compatible
  Control Relays, Motors, etc.
* ADDITIONAL FEATURES: Bus connector for other accessories. Resident EPROM with Software for all on-board devices.

User's Manual with Applications

"REPORT GENERATOR" A&T + manual	$89.95
Kit with parts & manual	$69.95
Bare Board, software & manual	$32.95

Add $3.00 for shipping USA

Service Available for checkout/repair

Dealer inquiries accepted

Send check or moneyorder. We also accept MC/VISA or call for C.O.D. shipment via UPS to:

ENER-Z COMPANY
P.O. BOX 635
FORT WASHINGTON, PA
215-757-0284 19034

USA

The following is a list of good to excellent newsletters that we have seen from various Timex/Sinclair user groups.

T.S.U.G. Newsletter ($10 per year-monthly)
Triangle Sinclair User Group
c/o Doug Dewey
206 James St., Carrboro, NC 27510

C.A.T.S. Newsletter($10 per year monthly)
Capitol Area Timex Sinclair User Group
P.O.Box 725, Bladenburg, MD 20710

Keyboards ($15 per year-bimonthly)
Timex and Sinclair Bay Area Microcomputers
P.O.Box 644, Safety Harbor, FL 33572
Editor: Mel Routt

TimelineZ ($15 per year-monthly)
Bay Area T/S User Group
P.O.Box 1312, Pacifica, CA 94044
Coordinator: George Mockridge

Boston Computer Society
Sinclair Timex User Group
Three Center Plaza, Boston, MA 02108
Director: Sue Mahoney

Classified Ads

CASSETTE TAPES--the highest quality tape is used to make these computer quality cassettes in a popular C-20 size, 10 minutes per side make these perfect for 16K programs. Each tape comes with two blank labels and a plastic case. Only $.80 each in quantities under 10. 10 for $7.50, 25 for $18.00, 50 for $34.00, or 100 for $63.00. On orders below $15.00 include $2.00 for shipping, on all others we pay shipping. Send check to: WMJ DATA SYSTEMS, 4 Butterfly Drive, Hauppauge, NY 11788. We have other size tapes available, send size needed and we will quote price.

CHECKREC--Introductory offer. Keep track of your checking account on a MC spreadsheet. Program will also reconcile your account account to your bank statement. TS1000/ZX81 with 16K. Provides hard copy if printer is used. Cassette $10.00. WMJ DATA SYSTEMS, 4 Butterfly Drive, Hauppauge, NY 11788. We have other software.

RAPID FILE, 16K, Basic/MC, more features, $10.95. Rapid Finance, 16K, 500 entries, $10.95. 3D Graphics, 16K or TS2068, please specify, tape $8.50, listing $2.50, Russell Brewer, 26630 Mill Rd., Frazeysburg, OH 43822.

16K TS 1000/1500 ZX81
– presenting –
RANDOM SCRAMBLE
A challenging educational word game for your entire family. Helps build todays necessary vocabulary and spelling skills.
– FEATURES –
1 to 4 Players – 1 to 15 Rounds – 4 Levels of difficulty – Double option — Constant score display – Current/ Remaining round display – Unique end of game player recaps display all play, by round, for each player! – 2500 Word built in (bypassable) dictionary! – User friendly.
Send $13.95 & $1.75 postage/handling. Visa/MC send number & expiration date. CT. residents please add $1.05 sales/tax.
FUSION MICRO PRODUCTS
PARK SQUARE STATION
P.O. BOX 15388 A
STAMFORD, CT. 06901

QUALITY ZX-TS SOFTWARE
BLACKJACK (The game of 21) (16K)
Enjoy this exciting game! Up to 6 players may play. All hands simultaneously displayed. Las Vegas rules apply, with computer holding all bets! Allows splitting pairs, doubling down & insurance. Great for testing your strategy.
HOUSEHOLD BOOKKEEPER (Menu driven) (16K)
Provides quarterly graphic display of your bill status, with bills due search by desired date. Summaries of expenses paid, averages, & expense as % of income. Printer option included.
CALENDAR PLANNER (Menu driven) (16K)
Scratchpad calendar. Up to 200 personal events may be filed. Add or delete anytime. Files stay in order of date! 12 search modes display appointments, auto mant., Honey Do's, jobs, etc. Also allows viewing desired week, month, or year.
$9.95 each includes postage (Ca. res. add Sales Tax)
★ For Free Brochure Send SASE ★
I.M.S. ENTERPRISES
Box 4583
Lancaster, Ca. 93539

THE WIZARD WORKS
1 (616) 873-5164
TV TYPEWRITER.....$7.50
A Text Handling Program
STATISTICAL GRAPH GENERATOR.....$7.50
A Graph Producing Program
SALES ANALYST.....$14.50
A Sales Report Program
HOME BUDGET GRAPHER.....$7.50
A Home Budget Program
CAVES OF SHYRA.....$9.50
A Game of Skill and Fate through the Magic Caves
HARRY HO & THE DISAPPEARING DIAMONDS..$9.50
An Interactive Adventure Game
HEX CALCULATOR.....$7.50
A Programers Address Calculator
SYMBOL TABLE GENERATOR.....$7.50
An Asmic File Utility
(All Programs 16K)
★ For more information about programs write for free catalog.
To order programs send amount with $1.50 postage & handling to:
The Wizard Works
Box 65, Walkerville, MI 49459

P.S.
A few parting comments:

- If you like T-S Horizons, please let us know. We welcome all constructive criticism, because we do want to become the best Sinclair magazine you can buy.

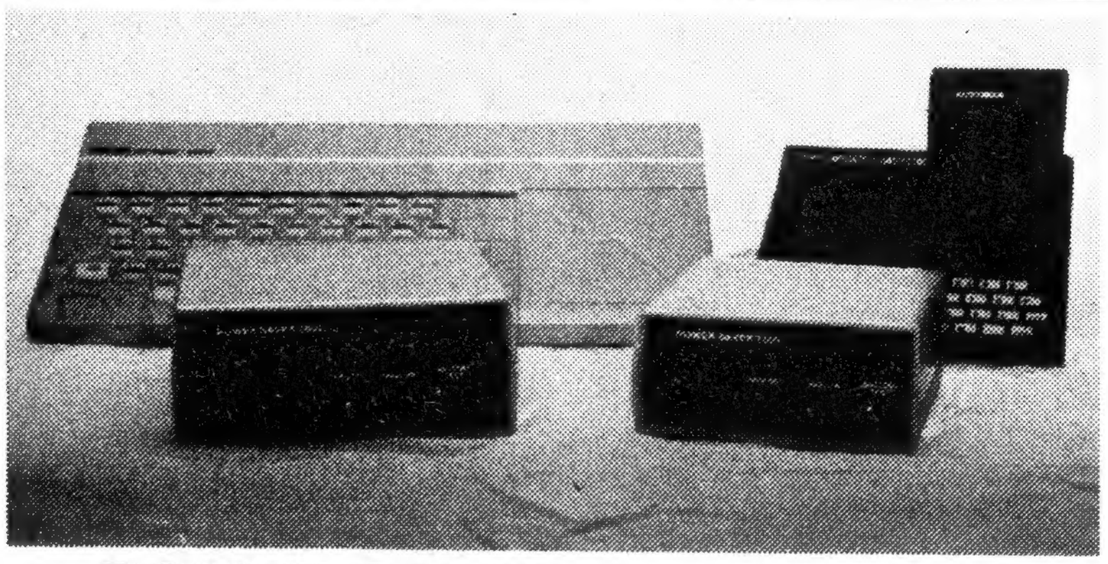
- If you like us, support our advertisers. And be sure to mention where you saw the ad.

P.S.

- Most importantly, if you have any bad experiences with our advertisers - or any company dealing with T-S/ZX related items - please tell us. We will not print ads from dishonest, unscrupulous companies, or from those who sell products that do not live up to the advertising.

Thank you,
Rick Duncan, Publisher

CHRISTIAN SOFTWARE
Bible Story Software
for T/S 1000
David & Goliath 12.95
The Ark 12.95
$1.50 shipping 7 handling
others available - send for free flyer
Box 547, Bettsville, Ohio 44815
1-419-986-5217



POWER SAVER 1000 & 2000
BATTERY BACK-UP

UNINTERRUPTABLE BATTERY BACK-UP FOR ZX80, ZX81, T/S1000, T/S1500, AND T/S2068

- ALLOWS HOURS OF PORTABLE, FULLY OPERATIONAL, COMPUTING.
- RECHARGEABLE BATTERIES INCLUDED IN CASE WITH LED TEST INDICATOR.
- RETAINS MEMORY WHEN AC FAILS.
- FULL 90 DAY WARRANTY!
- FULLY RECHARGES WITH COMPUTER'S POWER SUPPLY.
- PLUG IN INSTALLATION, NO MODIFICATION NEEDED.

P/S 1000
ZX80, ZX81, T/S1000, T/S1500
$59.95 - BLACK

P/S 2000
(T/S2068)
$119.95 - SILVER

(PRICE INCLUDES SHIPPING AND HANDLING)
(WI RESIDENTS ADD 5% STATE SALES TAX)

SEND CHECK OR MONEY ORDER TO:

H & Z ELECTRONICS
P.O. BOX 8761
MADISON, WI 53708

H & Z ELECTRONICS THE BATTERY BACK-UP SPECIALISTS"
OFFER MANY FEATURES NOT FOUND IN SIMILAR UNITS

Power Saver 1000-2000 is the state of the art in solid state design, in which numerous production models have been designed, built and tested. In respect we came up with a memory saving computer aid that allows fully operational computing when AC fails to operate the computer properly. The P/S1000 is fully incased with the highest quality rechargeable batteries available to meet the demands of your computer. Once discharged the batteries can be charged in either one of two positions explained in further detail:

CHARGING:

Due to the unique design of the P/S1000-P/S2000 it allows you the choice of a "Fast" or "Slow" (trickle) charge position.

SLOW - With the P/S1000-P/S2000 in the slow position the user has full use of all of the computers functions, along with it capability of retaining memory when AC fails to run the computer properly. In this position the batteries are trickle charged as needed to keep them in peek operating conditions without affecting the operation of the computer in any way.

FAST - This position has been built in for those of you who may wish to make your computer portable. In the fast charge position it allows you to restore the necessary charge to the batteries overnight (approx. 6 to 10 hours from minimum operating point)*. However, in this position it is not possible to run the computer due to the fact that all of the supplies power is delivered into charging the batteries.

*(NOTE: Due to the self regulation of the P/S1000 it is not possible to overcharge the batteries in either the fast or slow charge position)

LED BATTERY TEST:

The P/S1000-P/S2000 has a built in battery test feature that you will find quite unique and helpful. It is extremely easy to operate by depressing the push botton switch on the P/S1000-P/S2000 labeled "Battery Test". It will indicate the batteries capabilities. If the LED lights brightly there is enough of a charge to operate the computer. The LED will consistently dim with the capabilities of the batteries to run the computer properly. When the LED does not light, it simply means the batteries are undercharged and are not reliable to run the computer.

WARRANTY:

The P/S1000-P/S2000 is guaranteed to be free of defects due to workmanship and components for 90 days from the date of shipment. If necessary, the P/S1000-P/S2000 may be shipped to us for repairs. If out of warranty - repairs will be made at a minimal cost.

Due to manufacturing changes - charge rates may vary slightly.

SPECIFICATIONS:

T/S1000: APPROX. 3-1/2 Hours of Battery Life With T/S1016
APPROX. 7 Hours of Battery Life Without T/S1016

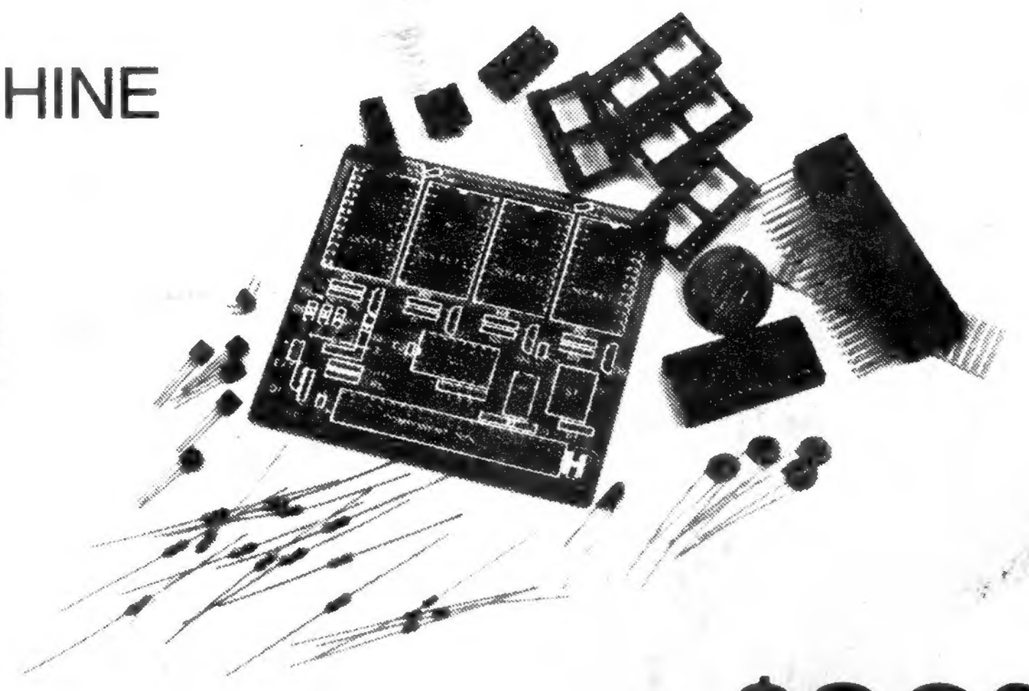
T/S2000: APPROX. 7 Hours of Battery Life With T/S2068

The HUNTER Board

Add Memory that won't Forget!

DESCRIBED IN JULY/AUGUST 1983 **Radio-Electronics**

- ✓ ADD YOUR OWN SYSTEM UTILITIES
- ✓ BUILD UP A LIBRARY OF MACHINE LANGUAGE SUBROUTINES
- ✓ UP TO 8K NONVOLATILE RAM
- ✓ USE HM6116LP CMOS RAM OR 2716/2732 EPROM
- ✓ COMPATIBLE WITH 16K RAM PACKS



$32.95
plus $1.95 shipping and handling

What a super product!...conceived and executed very nicely...and with quality components.

(SYNTAX QUARTERLY Winter 82)

For versatility this is even better than an EPROM...ranks quite high on the list of "must-haves"...

(SYNC Magazine Mar/Apr 83)

Provides the user with instant software...an extremely versatile memory extension...

(Z-WEST June 83)

Complete kit with one 2K 6116LP-3	$32.95
Additional three 6116LP-3	$25.00
Bare pc board & manual	$13.05
Female connector 23/46 gold bifurcated	$ 5.00
Kit for EPROM use only	$22.95
Assembled & tested with 2K	$47.95
Assembled & tested with 8K	$65.95
Shipping & handling per order	$ 1.95

Send check or money order to the address below:

HUNTER, 1630 FOREST HILLS DRIVE, OKEMOS, MI 48864